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**Psychological and Social aspects of infertility and infertility
treatment: The Persian experience**

A thesis submitted to Middlesex University in partial fulfilment of the requirements for the
degree of Doctor of Philosophy

Mariam Nasser RGN, RM, (B.Sc. Hons.) Kent University

September 2000

“Marry and multiply for I will make a display of you on the Day of Judgement.”

A saying of the Prophet Mohammed

(Cited in Inhorn, 1996, p222)

Abstract

This pioneering investigation is based on a longitudinal research, expanding over a 3 year period, exploring the Psychological and Social aspects of infertility and infertility treatment on Persian (henceforth referred to as Iranian) infertile couples attending infertility clinics in Tehran.

In phase 1 of the investigation an 85-item questionnaire in Farsi (Persian) was developed and validated, based on a four point Likert-type scale measuring the following factors: Psychological Distress, Social Extroversion, Marital Satisfaction, Attitudes Towards Modern Medicine and Religious Beliefs.

In phase 2 of the investigation, lasting over a period of two years, the above 85-item questionnaire was administered at three time phases, namely: initial assessment (when patients first attended the clinic for the purpose of diagnosis of their problem), during In Vitro Fertilisation (IVF) treatment (24 hours before egg collection), and a week after an unsuccessful treatment cycle.

The same questionnaire was also administered to fertile couples (the control group) attending the clinics for routine and non-fertility related treatment at three time phases (about three weeks between each administration). The data from the patient group ($n = 37$ couples) and control group ($n = 10$ couples), together with data obtained from the general population ($n = 197$) i.e. those who responded to the items for the purpose of validating the questionnaire (norms), was subjected to statistical analysis.

In comparison to norms and control group, infertile patients were more psychologically distressed. This finding is true for both men and women investigated. The degree of this psychological distress, however, is significantly greater for women than for men.

Standard Multiple Regression Analyses of the infertile patients' data showed that the main

predictors of psychological distress were gender, marital satisfaction, attitudes towards modern medicine, and religious beliefs. For female patients, marital satisfaction was a significant predictor of their psychological distress. Marital satisfaction was the main contributing factor to the socially withdrawn behaviour of the patients.

In phase 3 of the investigation, a year after data collection, examination of patients' notes showed that 7 out of the 37 infertile couples eventually had successful IVF with a term pregnancy. Results of a Stepwise Regression Analysis showed that the degree of psychological distress was the main predictor of pregnancy. In particular, couples who eventually conceived scored lower on psychological distress measures than those who did not. These findings are discussed in line with comparable reported literature on a mainly Western population, and implications of the findings for future research and counselling of infertile patients are outlined.

Acknowledgements

Many people have helped me to conduct the present research. Clinics, hospitals, doctors, nurses who helped to collect the data in Iran. In particular I would like to thank Professor N Maleknia (Professor in Biochemistry in Tehran University), Dr MM Aghssa (Obstetrician and Gynaecologist at Aban Hospital) and Dr B Faratian (Obstetrician and Gynaecologist at Madaen Hospital) who kindly helped and put me in touch with the participants of this research in Iran.

I am grateful to the help and advice received from Mr DJ Owen (Obstetrician and Gynaecologist) who professionally guided me on the medical side of this research.

My final and greatest thank go to my supervisors Dr Bahman Baluch and Professor Hannah Steinberg for all their guides, advice and support for conducting this research.

Table of Contents

| | |
|--|-----------|
| Abstract | 3 |
| Acknowledgements | 5 |
| 1 Chapter 1: Introduction/Synopsis..... | 14 |
| 2 Chapter 2: Definition, Prevalence, Diagnosis and Psychological and Social Aspects of Infertility..... | 29 |
| 2.1 Preface | 29 |
| 2.2 Definition and incidence of infertility | 30 |
| 2.2.1 World-wide..... | 30 |
| 2.2.2 Increase in the numbers seeking infertility treatment | 31 |
| 2.3 Causes of infertility and definitions of key terminology | 32 |
| 2.3.1 Preface..... | 32 |
| 2.3.2 Biological causes | 32 |
| 2.3.2.1 Female infertility | 33 |
| 2.3.2.2 Male infertility..... | 34 |
| 2.3.2.3 Combined male and female factors | 34 |
| 2.3.2.4 Infertility of undetermined causes | 35 |
| 2.4 Psychological Factors and Infertility..... | 36 |
| 2.4.1 Preface..... | 36 |
| 2.4.2 The rise and fall of the Psychogenic hypothesis..... | 36 |
| 2.4.2.1 Research not supporting the links between psychological factors and infertility | 40 |
| 2.4.2.2 Medical advances and the Psychogenic theory | 43 |
| 2.4.3 Conclusion..... | 44 |
| 2.5 Psychological and social consequences of infertility | 45 |
| 2.5.1 Preface..... | 45 |
| 2.5.2 Psychological consequences | 46 |
| 2.5.2.1 Psychological consequences- any theories?..... | 50 |
| 2.5.3 Gender differences in psychological consequences to infertility..... | 56 |
| 2.5.3.1 Gender differences and quality of life..... | 57 |
| 2.5.3.2 Sex role theory - explaining gender differences in psychological consequences..... | 58 |
| 2.6 Social consequences of infertility..... | 61 |
| 2.6.1 Marital satisfaction..... | 63 |
| 2.6.2 Sexual satisfaction..... | 65 |
| 2.7 Many facets, lessons learned and Chapter Summary | 68 |
| 3 Chapter 3: Development of new “miracle” techniques for treatment of infertility and their Psychological consequences..... | 71 |
| 3.1 Preface | 71 |

| | |
|---|----|
| 3.2 Man's quest for fertility: A brief historical overview | 72 |
| 3.2.1 Male infertility and the New Technological Developments..... | 74 |
| 3.2.2 Pre-IVF Medical Advances | 75 |
| 3.2.3 The Miracle of IVF | 76 |
| 3.2.3.1 Clinical Procedures for IVF | 77 |
| 3.2.4 Other Techniques..... | 79 |
| 3.2.5 Section Summary and Conclusion | 81 |
| 3.3 Psychological and social consequences of IVF | 82 |
| 3.3.1 Preface..... | 82 |
| 3.3.2 IVF and concerns about procedural and physical side effects | 83 |
| 3.3.3 Psychological consequences during IVF treatment | 86 |
| 3.3.3.1 Gender differences | 86 |
| 3.3.3.2 IVF affecting Marital and Sexual satisfaction..... | 89 |
| 3.3.3.3 Is a particular stage of IVF more stressful?..... | 91 |
| 3.3.3.4 Locus of control and infertility treatment..... | 93 |
| 3.4 Psychological consequences post-IVF treatment | 94 |
| 3.5 IVF and the Psychogenic hypothesis | 96 |
| 3.6 Chapter Summary and Conclusion..... | 99 |

4 Chapter 4: A critical review of methodological weaknesses of the research on Psychological and Social Aspects of infertility..... 101

| | |
|---|-----|
| 4.1 Preface | 101 |
| 4.2 The Pre-IVF Literature..... | 102 |
| 4.3 Is there a Theory? | 103 |
| 4.4 Methodology | 104 |
| 4.4.1 Psychological consequences due to Treatment as opposed to being Infertile | 105 |
| 4.4.2 Sample Size | 105 |
| 4.4.3 Little research on couples..... | 106 |
| 4.4.4 No Control Group | 107 |
| 4.4.4.1 What is the most appropriate control group? | 110 |
| 4.4.5 Measurement and Instruments: Self-report and Standardised Questionnaire | 110 |
| 4.4.6 When to assess patients? | 113 |
| 4.5 Chapter Summary and Conclusion..... | 114 |

5 Chapter 5: Part I: The role of culture in Psychological and Social aspects of Infertility..... 115

Part II: Iranian culture - Infertility and infertility treatment 115

| | |
|---|-----|
| 5.1 Preface | 115 |
| 5.2 The significance of the neglected cultural factor | 115 |
| 5.3 Attitudes Towards Medicine | 117 |
| 5.3.1 Islam and controversial aspects of infertility treatment..... | 119 |
| 5.4 Religion..... | 120 |
| 5.4.1 Religion and psychological distress of infertility..... | 121 |

| | |
|--|-----|
| 5.4.2 Religion, culture and adoption..... | 123 |
| 5.5 Cultures and diagnosis of infertility | 124 |
| 5.6 Part II: Iranian culture - Infertility and infertility treatment | 127 |
| 5.6.1 Preface..... | 127 |
| 5.7 Psychology of Parenthood in Iran..... | 128 |
| 5.7.1 Continuing the family name | 129 |
| 5.7.2 Happiness in having children | 129 |
| 5.7.3 Family ties in Iran..... | 131 |
| 5.7.4 Economical Reasons | 131 |
| 5.7.5 Adoption in Iran..... | 131 |
| 5.8 Who is blamed for Infertility..... | 132 |
| 5.8.1 Procreation Theory/ religion and the Iranian society | 132 |
| 5.8.2 What if men are medically proven to be infertile?..... | 134 |
| 5.8.3 Sex role and Male infertility in Iran | 135 |
| 5.9 Infertility treatment in Islamic Republic of Iran | 136 |
| 5.10 Incidence of infertility in Iran | 138 |
| 5.11 Courtship rituals in Iran..... | 138 |
| 5.11.1 Sexual relationship and treatment | 139 |
| 5.12 Chapter Summary and expected findings | 141 |

6 Chapter 6: Developing and administering a valid and reliable questionnaire in

Farsi to examine psychological and social aspects of infertility and infertility

treatment..... 143

| | |
|--|-----|
| 6.1 Preface | 143 |
| 6.2 Step One: The Identification of Factors..... | 144 |
| 6.3 Step Two: Creating items in Farsi | 145 |
| 6.3.1 Q sorting..... | 145 |
| 6.4 Step Three: Formatting the Questionnaire | 147 |
| 6.5 Step Four: Administering the Questionnaire to Iranian Population..... | 147 |
| 6.5.1 Method..... | 147 |
| 6.6 Principle Component Analysis - test of validity..... | 149 |
| 6.6.1 Labelling the Extracted Factors | 153 |
| 6.6.2 Reliability Analysis..... | 155 |
| 6.6.3 Final stage of the validated Questionnaire..... | 157 |
| 6.7 Administration of the Questionnaire to Patients and Control group..... | 157 |
| 6.7.1 Method..... | 157 |

7 Chapter 7: Results 161

| | |
|---|-----|
| 7.1 Psychological Distress, infertility and infertility treatment | 161 |
| 7.1.1 Preface..... | 161 |
| 7.1.2 Psychological Distress level of 3 groups: the patients, the control and the norms | 162 |
| 7.1.3 Psychological Distress level and Time of assessment | 163 |
| 7.1.4 Psychological Distress level for men and women | 165 |
| 7.1.5 Time of Assessment and Gender | 170 |
| 7.1.6 What are the Key Predicting factors in Psychological Distress of infertile | |

| | |
|---|------------|
| patients? | 172 |
| 7.1.6.1 Path Analysis..... | 174 |
| 7.1.6.1.1 Psychological Distress and Marital Satisfaction | 175 |
| 7.1.6.1.2 Psychological Distress and Attitudes towards modern medicine | 178 |
| 7.1.6.1.3 Psychological Distress and Religious Beliefs..... | 179 |
| 7.1.6.1.4 Psychological Distress and Cause of infertility | 181 |
| 7.1.6.1.5 Gender difference..... | 185 |
| 7.2 Social Extroversion and Infertility | 188 |
| 7.2.1 Preface..... | 188 |
| 7.2.2 Comparison of the patients, the control and the norms on their Social Extroversion | 189 |
| 7.2.3 What are the Key Predicting Factors of Social Extroversion of infertile patients? | 192 |
| 7.3 Psychological Variables and likelihood of Pregnancy | 196 |
| 7.3.1 Preface..... | 196 |
| 7.3.2 What are the Key Predicting Factors in Achieving Pregnancy?..... | 196 |
| 8 Chapter 8: General Discussion..... | 200 |
| 8.1 Preface | 200 |
| 8.2 Summary stages..... | 201 |
| 8.3 Summary of the Findings..... | 202 |
| 8.4 Psychological Distress and infertility | 203 |
| 8.4.1 Religion..... | 204 |
| 8.4.2 Gender differences and Psychological Distress | 205 |
| 8.4.3 Psychological Distress and Attitudes Towards Modern Medicine | 207 |
| 8.4.4 Cause of infertility and Psychological Distress..... | 208 |
| 8.4.5 Age and Psychological Distress..... | 209 |
| 8.5 Psychological and Social Aspects of IVF treatment..... | 210 |
| 8.5.1 Gender differences and treatment..... | 211 |
| 8.5.2 IVF affecting marital satisfaction..... | 212 |
| 8.5.3 Psychological consequences, post-IVF treatment | 213 |
| 8.6 Social Extroversion and infertility | 213 |
| 8.7 Pregnancy and Psychological Distress | 214 |
| 8.7.1 Is there support for Psychogenic theory..... | 215 |
| 8.8 Methodological Issues | 216 |
| 8.8.1 Honesty of the Responses | 216 |
| 8.8.2 Lack of participation- Sample size..... | 217 |
| 8.8.3 Is the sample biased?..... | 218 |
| 8.8.4 Is the norm group too small?..... | 219 |
| 8.8.5 Why shared variance is so small?..... | 219 |
| 8.8.6 Should standard validated Questionnaires have been used in parallel to the one developed here? | 219 |
| 8.8.7 Why certain stages in treatment were assessed?..... | 220 |
| 8.9 Implications | 221 |
| 8.10 Conclusion..... | 221 |

References 223

Appendices..... 258

**Appendix 1: The complete list of questionnaire items administered to 197 Iranians
for the purpose of validation 258**

**Appendix 2: Initial Statistics for a Principle Components Analysis of the 128-
item Questionnaire 271**

**Appendix 3: Results of Cronbach’s alpha for test of internal reliability for the
five factors of the questionnaire..... 272**

**Appendix 4: The complete list of questionnaire items after factor analysing and
tests of validity and reliability 277**

**Appendix 5: List of publications and conference presentations by the author
and collaborators 286**

Tables and Figure

| | |
|--|-----|
| Table 2.3.1 Percentages of infertility as due to a specific cause..... | 35 |
| Table 3.2.1 A summary of success rate of infertility treatment techniques in the US (Begley, 1995) and in the UK (Neuberg, 1996)..... | 81 |
| Table 4.4.4.1 Selected studies widely cited in the literature since 1990 that have not included a control group (taken from Greil, 1997)..... | 109 |
| Table 6.6.1 Initial Statistics for a Principle Components Analysis of the 128-item Questionnaire: Eigenvalue, Variances and Cumulative Variances for first five factors | 150 |
| Figure 6.6.1 Factor Scree Plot of Eigenvalue for the 128-item Questionnaire | 150 |
| Table 6.6.2 A factor loading matrix, using Varimax-Rotated Principle Components, for the 128 items Questionnaire | 152 |
| Table 6.6.3 Factor Correlation Matrix for 128-item Questionnaire with 5 factors showing the internal correlation of the five factors (factors yet to be labelled, see section 6.6.1) | 153 |
| Table 7.1.1 Mean Psychological Distress scores together with their corresponding standard deviations (SD) for the patients and the control at the first assessment in comparison to the norms | 162 |
| Table 7.1.2 Post hoc comparison of the means using Fisher's PLSD, Scheffe's F-test and Dunnett's t test between the patients and the control at the first assessment in comparison to the norms | 162 |
| Table 7.1.3 Mean Psychological Distress scores together with their corresponding standard deviations (SD) for the patients and the control (at all three time phases) in comparison to the norms | 163 |
| Table 7.1.4 Post hoc comparison of the means using Fisher's PLSD, Scheffe's F-test and Dunnett's t test between the patients and the control (at all three time phases) in comparison to the norms | 164 |
| Table 7.1.5 Mean Psychological Distress scores together with their corresponding standard deviations (SD) for the patients and the control at first assessment in comparison to the norms (men only)..... | 165 |
| Table 7.1.6 Post hoc comparison of the means using Fisher's PLSD, Scheffe's F-test and Dunnett's t test between the patients and the control at first assessment in comparison to the norms (men only)..... | 166 |
| Table 7.1.7 Mean Psychological Distress scores together with their corresponding standard deviations (SD) for the patients and the control at all three time phases in comparison to the norms (men only)..... | 166 |
| Table 7.1.8 Post hoc comparison of the means using Fisher's PLSD, Scheffe's F-test and Dunnett's t test between the patients and the control at all three time phases in comparison to the norms (men only)..... | 167 |
| Table 7.1.9 Mean Psychological Distress scores together with their corresponding standard deviations (SD) for the patients and the control at first assessment in comparison to the norms (women only)..... | 168 |
| Table 7.1.10 Post hoc comparison of the means using Fisher's PLSD, Scheffe's F-test and Dunnett's t test between the patients and the control at first assessment in comparison to the norms (women only)..... | 168 |
| Table 7.1.11 Mean Psychological Distress scores together with their corresponding standard deviations (SD) for the patients and the control at all three time phases in comparison to the norms (women only) | 169 |

| | |
|---|-----|
| Table 7.1.12 Post hoc comparison of the means using Fisher's PLSD, Scheffe's F-test and Dunnett's t test between the patients and the control at all three time phases in comparison to the norms (women only) | 169 |
| Table 7.1.13 Mean Psychological Distress scores together with their corresponding standard deviations (SD) as per condition in the present analysis..... | 170 |
| Table 7.1.14 Standard Multiple Regression of Age, Marital Satisfaction, Attitudes Towards Modern Medicine, Religious Beliefs, Cause of Infertility, and Gender on Psychological Distress | 173 |
| Figure 7.1.6.1 Path diagram together with actual values of path coefficients and the Residual path coefficients of Gender, Marital Satisfaction, Religion, and Attitudes towards Modern Medicine on Psychological Distress..... | 174 |
| Table 7.1.15 Table showing the results of Spearman's Correlation Coefficient between the Psychological Distress scores and Marital Satisfaction with corrections made for ties for the patients at all three time phases | 175 |
| Table 7.1.16 Table showing the results of Spearman's Correlation Coefficient between the Psychological Distress scores and Marital Satisfaction with corrections made for ties for the norms..... | 176 |
| Table 7.1.17 Mean Marital Satisfaction scores together with their corresponding standard deviations (SD) for the patients at three different time phases | 177 |
| Table 7.1.18 Table showing the results of Spearman's Correlation Coefficient between the Psychological Distress scores and Attitudes Towards Medicine with corrections made for ties for the norms | 179 |
| Table 7.1.19 Table showing the results of Spearman's Correlation Coefficient between the Psychological Distress scores and Religion with corrections made for ties for women at first assessment..... | 180 |
| Table 7.1.20 Table showing the results of Spearman's Correlation Coefficient between the Psychological Distress scores and Religion with corrections made for ties for the norms | 181 |
| Table 7.1.21 Mean Psychological Distress scores together with their corresponding standard deviations (SD) for the patients with Cause of infertility at all three time phases | 182 |
| Table 7.1.22 Post hoc comparison of the means using Fisher's PLSD, Scheffe's F-test and Dunnett's t test for three groups of patients ("male cause", female cause" and "both cause")..... | 182 |
| Table 7.1.23 Mean Psychological Distress scores together with their corresponding standard deviations (SD) for the patients with Cause of infertility (men only). | 183 |
| Table 7.1.24 Post hoc comparison of the means using Fisher's PLSD, Scheffe's F-test and Dunnett's t test for three groups of patients ("male cause", female cause" and "both cause") (men only) | 183 |
| Table 7.1.25 Mean Psychological Distress scores and corresponding standard deviations (SD) for men and women as per cause of infertility..... | 184 |
| Table 7.1.26 Standard Multiple Regression of Age, Marital Satisfaction, Attitudes Towards Modern Medicine, and Religious Beliefs, on Psychological Distress of female patients..... | 186 |
| Table 7.1.27 Table showing the results of Spearman's Correlation Coefficient between the Psychological Distress scores and Marital Satisfaction with corrections made for ties (female patients)..... | 186 |
| Table 7.2.1 Mean Social extroversion scores together with their corresponding standard | |

| | |
|--|-----|
| deviations (SD) for the patients and the control at first assessment in comparison to the norms | 189 |
| Table 7.2.2 Post hoc comparison of the means using Fisher's PLSD, Scheffe's F-test and Dunnett's t test for all three groups (the patients, the control and the norms) at first assessment..... | 190 |
| Table 7.2.3 Mean Social extroversion scores together with their corresponding (standard deviations) SD for the patients and the control (all three time phases) in comparison to the norms | 190 |
| Table 7.2.4 Post hoc Table for comparison between three groups on their Social Extroversion- at all three time phases..... | 191 |
| Table 7.2.5 Standard Multiple Regression of Age, Marital Satisfaction, Attitudes Towards Modern Medicine, Religious beliefs, Cause of infertility, and Gender on Social Extroversion..... | 193 |
| Table 7.2.6 Table showing the results of Spearman's Correlation Coefficient between the Social Extroversion scores and Marital Satisfaction with corrections made for ties for all the patients..... | 193 |
| Table 7.2.7 Table showing the results of Spearman's Correlation Coefficient between the Social Extroversion scores and Marital Satisfaction with corrections made for ties for the norms..... | 194 |
| Table 7.3.1 Standard Multiple Regression of Age, Psychological Distress, Social Extroversion and Marital Satisfaction on achieving Pregnancy | 197 |
| Table 7.3.2 Analysis of Variance Table for Age when Psychological Distress was controlled for | 198 |
| Table 7.3.3 Analysis of Variance Table for Psychological Distress when Age was controlled for | 198 |
| Table 7.3.4 Mean of Psychological Distress scores together with their corresponding (SD) for men and women patients who had a successful IVF and those who did not have a successful IVF | 199 |

1 Chapter 1: Introduction/Synopsis

“Issues of race, culture, and religion impact each infertile couple’s experience of infertility either by influencing their perspective, defining their approach to treatment or family-building options, or impacting their psychological adjustment.”

(Burns, Covington & Kempers, 1999, p19)

According to a generally acceptable definition (World Health Organisation-WHO 1993a,b) infertility is usually defined on a pragmatic basis as failure to conceive after one/two year(s) of regular, unprotected intercourse or the occurrence of two consecutive natural miscarriages or stillbirths. Therefore if, a couple or a man or a woman complies with the above definition this would constitute as an infertile statistic.

From the point of view of the present investigation, however, for most infertile men and women, it has generally been agreed that being infertile is associated with a life time of psychologically and socially critical reactions (see for a review Golombok, 1992; Burns et al., 1999). Various forms of psychological reactions such as anxiety, depression, anger, frustration and even suicidal feelings amongst those unable to conceive have been well documented in the literature (e.g. Menning, 1988; Stanton & Dunkel-Schetter, 1991). Moreover, it has been argued that, from a social point of view, infertile men and women demonstrate such behaviour as withdrawal from social events, lack of interest in activities involving children and significant impairment in marital and interpersonal relationships (Golombok, 1992). Although the relatively recent “miracle” treatments of infertility such as IVF (Steptoe, Edwards & Purdy, 1980) have raised the hopes of many infertile women and men, because they are relatively prolonged, with low success rate, and high cost they may indeed have their own unique impact

on the psychological and social aspects of infertility (Edelmann, 1990; Baluch, Craft & Al-Shawaf, 1992; Hopkins, 1992; Robinson & Stewart, 1996; Brighenti, Martinelli, Ardeni & La-Sala, 1997; Slade, Emery & Lieberman, 1997). A careful review of the literature, however, reveals many difficulties in the contribution that the current literature could make to our understanding of some key questions listed below:

- In the absence of using appropriate controls and psychometric measures in the reported literature, how certain could one be that the psychological and social aspects of infertile patients are necessarily greater than what one would expect from the general population norms, and in particular a comparable group of “fertile” clinical patients?
- If indeed it is the case that being infertile has its own unique and significant psychological and social aspects, what are the contributing factors causing such reactions?
- Are psychological and social aspects to infertility all consequences of being infertile, or could they at times be a contributing factor?
- In the absence of appropriate controlled research, would undergoing infertility treatment aggravate or elevate psychological and social aspects of infertility?
- In view of the scarcity of reported research on other cultural groups, to what extent what is reported on a mainly Western population could be argued to be “universal” i.e. attributed to all cultures and societies, and to what extent “culture specific”?

Based on available literature, there are several reasons for being unable to answer the above key questions. Firstly, most of the research conducted in the area of “psychology of infertility” suffers from specific methodological problems such as lack of adequate controls, use of questionnaires not validated for research on infertility, and small sample size. In view of this it raises questions as to the validity of the findings (Stanton & Dunkel-Schetter, 1991; Greil, 1997).

Secondly there is an agreement that most of research on psychological aspects of infertility and infertility treatment is atheoretical (Matthews & Matthews, 1986; Stanton & Dunkel-Schetter, 1991; Greil, 1997). Consequently most research to this date is of an exploratory nature or mainly descriptive. Very few are qualitative in nature.

Thus in the absence of any established research or “theory” of what factors may indeed trigger such psychological and social aspects, there is not much scope to attribute specific factors for any investigation as to the cause of such aspects.

Finally, apart from a handful of reported studies (e.g. Merari, Feldberg, Shitrit, Elizur, & Modan, 1996, Sewpaul, 1999) no research has monitored the fate of those patients who eventually have conceived. Are there any predictable psychological or social variables that might have contributed to their conception?

There is therefore greater need for planned investigations with a more stringent and scientifically valid methodology. Adding to the above points is the significant lack of research on psychological and social aspects of infertility and infertility treatment amongst non-Western, particularly Middle Eastern, population.

The question of how different national customs or cultural contexts might shape the experience of infertility is virtually never addressed (Greil, 1997). We need more studies of cross-cultural and historical variation in the experience of infertility and infertility treatment. However, this issue has also been pointed repeatedly in recent literature on infertility. For example, Molock (1999) stated: “While the perception of infertility as a violation of cultural expectations is fairly uniform, the ways in which different cultural, ethnic, and religious groups perceive infertility have largely been ignored by health care providers and mental health professionals.....Infertility cannot be diagnosed or treated without an understanding of the cultural frame of reference of both the client and the health care provider” (p249).

For a universal understanding of issues related to psychological aspects of infertility and infertility treatment there is therefore a great need to take a wider approach and to tackle the issues raised above amongst diverse culture groups (e.g. Greil, 1997; Baluch, Nasser & Aghssa, 1998; Molock, 1999).

The main aim of the present thesis is an attempt to tackle the issue of psychological and social aspects of infertility and infertility treatment amongst Iranians in a carefully planned longitudinal investigation.

Apart from pioneering works of the author and collaborators (e.g. Baluch et al., 1998) there has been no widely, available published research on what specific psychological and social aspects are experienced by infertile men and women in the Islamic society of Iran. Thus the present study has the element of novelty in its approach, as well as contributing to the general growing body of work on the universal as opposed to culture specific aspects of infertility. The remaining part of this introductory chapter is devoted to a summary synopsis and further elaboration of materials covered in each chapter and more specific research questions.

In Chapter 2 the definition and prevalence of infertility in the West and world-wide will be outlined, followed by possible causes of infertility and the lack of an agreement on what causes infertility and which theories may explain why there is such significant psychological reactions to being infertile. However, as will be explained in Chapter 3, with the birth of Louise Brown in August, 1978, the world's first test-tube baby in England (Steptoe et al., 1980), an exciting opportunity was seen to have been offered to millions of infertile men and women around the world that a "cure" was indeed in sight. Soon after this event, over 200 clinics around the world engaged in what is known as In Vitro Fertilisation or IVF treatment (Mao & Wood, 1984; Salzer, 1986; Winston, 1991). IVF (and other related techniques such as Gamete Inter Fallopian Transfer-GIFT, and Micro Injection) did produce the miracle of

enabling women to achieve pregnancy, which would have been impossible under previous treatment regimes, yet many disappointing statistics also emerged from this exercise:

Firstly, the success rate for IVF and all other modern treatment procedures (to this date) is very low. For example, with only approximately 10% of embryos transferred resulting in term pregnancy (Lane & Gardner, 1996), or even less than 10% success rate (Hartz, 1992; Sauer, 1995). Thus many hopeful individuals have to face the daunting realisation of failure.

Secondly, most infertility treatment procedures are prolonged and very costly. A normal IVF cycle, for example, may take up to three weeks and cost over £4,000 if carried out in a private clinic (Winston, 1991). Under the National Health Service (NHS) there is usually a long waiting list and indeed research has shown that patients suffer a great deal of stress whilst waiting to receive IVF treatment (Atherton & Howel, 1995). In addition the IVF treatment itself may contribute to the psychological stress of the patients because it involves long treatment cycles, together with daily injections of hormones, painful egg collection procedure, and embryo transfer (Edelmann, 1990; Baluch et al., 1992a; Robinson & Stewart, 1996; Bringhenti et al., 1997; Slade et al., 1997).

Finally, the fact that new medical procedures are publicised widely in the media raises the hopes of millions of infertile patients which, together with the significant failure rates and the prolonged and costly consequences, contributes to the already heightened psychological agony of the patients (Pines, 1990; Robinson & Stewart, 1996). Consequently the impact of the recent medical developments in the treatment of infertility and its disappointing fate has now led to a growing interest amongst the scientific community to explore possible psychological consequences of undergoing the treatment cycles in addition to or as distinct from the general psychological aspects of infertility. Moreover, there have been pioneering attempts to explore possible psychological and social variables contributing to a successful

treatment outcome. A critical review of the latter literature, however, prior to the development of IVF (see Chapter 3) and those carried out more recently shed some disappointing observations (see Chapter 4). As detailed in the latter two chapters there are many conceptual and methodological problems associated with the reported studies that raise doubts about the validity and reliability of the investigations. Most importantly, there is no established psychological theory that could explain some of the reasons that infertile people do demonstrate such a great degree of psychological distress (Dunkel-Schetter & Stanton, 1991; Greil, 1997). Some attempt to establish these theories in relation to aspects of infertility behaviour and found no support. For example from a socio-biological perspective there is a natural inherent drive in humans to reproduce in order to maximise their genetic representation in subsequent generations (Suarez & Gallup, 1985). Contrary to this theory, some of the infertile couples pursue adoption or Donor Insemination (DI) as alternative methods of parenting which would not be justified by this theory (Edelmann, Humphrey & Owens, 1994). The lack of a genetic link to either parent in most cases of adoption, or to the male partner in the case of DI, raises the question of how these couples could be satisfied by any drive for genetic continuity? (Edelmann et al., 1994). It is therefore no surprise that most research in the area of infertility is exploratory or a very few are qualitative in nature.

Even so, from a more of a methodological point of view, numerous factors could be listed that cast doubts on the validity of investigations. For example, most research prior to the discovery of IVF has placed greater emphasis on women's psychological reactions to infertility (e.g. Abse, 1966; Sandler, 1968; Matthews & Matthews, 1986; Pantesco, 1986; Costigan, 1992; Mason, 1993). This is possibly due to false reasoning that a couple's inability to conceive is mainly the woman's fault (Bents, 1985). Recent medical statistics have proved this to be a misconception. According to Begley (1995) and Stanton and Dunkel-Schetter (1991) a

couples' inability to conceive is 40% female in origin, 40% male in origin and 20% due to some unknown factor or attributed to both partners. Most importantly, however, whichever partner is to be "blamed" for the inability to conceive, it is plausible to argue that no research on psychological aspects to infertility would be complete if it is focused on only women or only men. Inability to conceive is a factor that becomes noticed only when a couple attempt to have a child. Even when one partner is diagnosed as the cause of infertility (in 20% of cases it could be attributed to both partners or to an unknown factor), it is both partners as a "couple" who will suffer psychologically, and it is also the interaction of their emotions and behaviour that gives rise to a more representative picture of their psychological aspects of infertility. Thus any study in this field investigating only one partner does not provide scientists with a comprehensive understanding of such reactions (Greil, 1991). Moreover, it is well documented that most studies on psychological aspects of infertility are either on very small samples (for review see Morrow, Thoreson & Penny, 1995; Eugster & Vingerhoets, 1999) or on anecdotal materials (e.g. Berger, 1980; McEwan, Costello & Taylor, 1987).

Very few studies have assessed infertile men or women before infertility investigation was begun (see however, e. g. Connolly, Edelmann, Cooke & Robson, 1992; Visser, Haan, Zalmstra & Wouters, 1994). As Tennen, Affleck and Mendola (1991) explain, for a complete understanding of feelings and emotional reactions to the inability to conceive, couples' reactions and coping strategies should be studied from the time they just begin to suspect their inability to conceive and experience the threat of impaired fertility. Adding to the problems listed above is the position stated by Baluch et al. (1992a) that undergoing treatment cycles such as IVF may itself heighten the psychological stress of infertile patients, thus it is also important to examine psychological aspects of infertility independent of those aggravated by undergoing a particular treatment regime. More recently Greil (1997) added the issue of lack

of adequacy of psychological “tests” and the need for developing valid measures (Slade et al., 1997) that are more specifically developed to “testing” the psychological and social aspects of infertile people (see Chapter 4). In short, from materials reported in chapters 3 and 4 it will be concluded that for a more scientifically valid understanding of infertility behaviour attention to sample size, statistical power, together with a longitudinal design (before, during and after treatment) and choosing a representative sample and reliable and valid measures is very much needed (see also Stanton & Dunkel-Schetter, 1991).

The materials documented in chapter 4 are perhaps the most crucial ones insofar as the rationale for this investigation is concerned namely: the rather non-existence of scientific research on different diverse cultures (other than the Western culture) on psychological aspects of infertility. Such scarce scientific research on different culture groups raises many questions: for example, how do men and women in diverse cultures and societies such as in the Middle East, Africa or Asia respond to their infertility misfortunes? Are the psychological aspects of infertility and infertility treatment different amongst Western and Eastern or amongst industrialised and third world countries? In other words, do people react differently in different cultures (or societies) depending on their “specific” cultural values? Or is there some universality of social and psychological aspects of infertility and infertility treatment independent of membership of a particular society or cultural ritual? In the absence of any specifically developed theory or explanation as to the cultural impacts on infertility (Stanton & Dunkel-Schetter, 1991), one may argue that there are many plausible reasons to believe that the former explanation may be true - namely that there are as many diverse reactions to infertility as there are cultures/societies and people strongly associated with them. For example, societies differ on the significance of what it means to be childless or even giving birth to the “wrong” gender particularly producing a daughter! In Korea and Taiwan it is

essential for a male member of the family to perform ancestral rituals and to ensure family continuity. Not having a son is therefore equivalent in its impact on the couple as being childless (Greil, 1991; Burns et al., 1999). Similarly, in most Asian and third world countries having children, in particular a son, is seen as an absolute financial necessity as they will be the future breadwinners of the family and a supporter for parents in their retirement (Baluch, 1992; Molock, 1999). Thus if having a baby (in particular a son) is a social necessity it would be no surprise to see people in third world countries showing greater and more diverse psychological stress at not being able to conceive than people in the Western world. Another very noticeable factor across different culture groups is the issue of religion, its commandments and values set for producing offspring. Indeed in some religions such as Christianity, for those faithful followers having children is seen as a divine satisfaction. "Give me sons or I shall die" said Leah to Jacob (Genesis 30:6) showing the intensity of torture felt by many people who realise their infertility (Jennings, 1992). Thus the greater the religious belief in a particular society, the greater one would expect the psychological anguish to be at being unable to conceive. Cultures also differ in their "diagnosis" of infertility. In some cultures like the Greek, Polish peasants and Oceanic Turk islanders, only women are considered as being responsible for infertility. The Aowin people of Ghana also believe that infertility happens when a woman's womb has turned over or is even caused by witchcraft or a result of disruption in social relationships. According to Trukese if a woman does heavy work then her "bad stomach" brings her infertility. For the Ndembu of Zambia a woman's infertility is ascribed as her being caught by the shade of a recently deceased ancestor (Greil, 1991). Indeed, as argued by Greil (1991) in many such societies, men whose wives have borne no children may legitimately divorce them or take a second wife.

Greil (1991) further provides examples of the diversity of cultural reactions and attributes to

infertility e.g. the North African Somali attribute infertility to astrological influences, whilst the Toradja tribe of the Central Celebes Islands consider that infertility may be the result of the ancestors' anger at an oversight in the performance of a couple's marriage ritual; they attempt to rectify the situation by re-sanctifying the marriage.

Finally in most modern Middle Eastern cultures/societies it is neither the man nor the woman, nor the anger of ancestors and astrological influences that causes infertility, being infertile is seen mainly as being written in one's fate and destiny - as an act of God (Jindal & Gupta, 1989; Baluch, Fallone, Anderson, Furnham & Aghssa, 1994; Sewpaul, 1999). Thus if cultures differ in their "diagnosis" of infertility, religious significance of being infertile, and if beliefs such as the ones outlined above are still strongly rooted in the minds and behaviour of the "new" generations, it is bound to impose its unique and "culture" specific impact on individual's psychological and social reactions. A person who sees God as responsible for his/her misfortune may exhibit different forms and degrees of psychological reactions than one who views a medical deficit as a factor. Indeed these differences in "diagnosis" could even affect people's trust in modern medicine and the manner in which they may seek help for their problem. Moreover, if in view of cultural and religious influences, the society gives the right to a man to divorce his wife or seek a second partner if she is seen to be infertile, the psychological impacts are bound to differ compared to those societies in which no concessions are given to seek a different partner (see e.g. Greil, 1991; Inhorn, 1996).

It is therefore a plausible argument that infertile couples' beliefs and attributions of infertility, their trust in modern medical interventions, their strength of religious beliefs and the stigma that the society they live in attaches to being infertile, could all impose their unique impact on their psychological aspects (Baluch et al., 1998). In this respect, perhaps, the only factor that may be argued to be "universal" is that infertile people who are adamant about having children

in all culture groups and societies experience certain levels and degrees of anxiety, depression and frustration in relation to their misfortunes. What may be argued to differ is the manifestation and facets of such reactions. For example in line with Kubler-Ross' (1969) model of universality of mourning processes all infertile people experiencing serious problems in conception express their feelings by first entering a stage of shock and denial followed by anger and frustration. They may all experience a stage of grief and finally accept their fate (see also Jindal & Gupta, 1989; Sewpaul, 1999). However, this does not mean that people in different culture groups and societies experience these feelings for the same underlying reasons! Indeed it is more plausible to argue that the nature of underlying factors, i.e. the reasons that have aggravated such psychological reactions, the strength and degree of emotions and feelings, and the manner in which they are manifested, may be entirely culture specific and can only be understood and tackled by examining and having scientific knowledge of each and every culture/society (see e.g. Ahmed, Chu & Robson, 1998; Molock, 1999; and also see Furnham & Malik, 1994 for arguments on the significance of research on culture as a variable in health related psychology).

In view of the above arguments, as outlined in chapter 5 the Iranian culture/society could provide an ideal case for a study on social and psychological aspects of infertility. Although modern medicine in Iran is now strongly in place and there are many infertility clinics established, nevertheless the society is heavily governed by religious beliefs and traditions. According to Islam, producing offspring is considered a holy and essential duty (Schenker, 1992; Saroukhani, 1993). A man has the right to either divorce his wife if she is found to be infertile or to take a second wife. Moreover, the society is firmly established along the lines of male dominance and the state supports such actions as women needing permission from their husbands to travel, leave the country or to take-up an occupation (Vatandoust, 1985).

According to Saroukhani (1993) it is the usual practice in Iran for a man to marry a woman who is less educated than him and her “successful” role is seen in the society as one who should produce offspring from the very onset of marriage. The Islamic law, however, does not hinder seeking medical treatment (Schenker, 1992). In particular, IVF and other recent techniques have been accepted and supported by the government. Indeed the Islamic law has even agreed to legitimise treatment using eggs donated by another woman. This of course provides a researcher with a unique “research laboratory” in which modern medicine crosses pathways with traditions, and strongly implemented religious and cultural influences. How would men in such a male dominated society react psychologically if they were found to be infertile? What would be women’s psychological reaction if they were found to be infertile? How do couples cope psychologically with their problem? To what extent do men and women’s religious beliefs interact with modern medicine? To what extent would Iranians consider egg donation or adoption as an alternative approach to infertility treatment? (Baluch et al., 1992b; Baluch et al, 1994a). The results of a study on Iranian men and women who are infertile may not only provide medical professionals with valuable information regarding Iranian infertility and its psychological consequences, but may also provide a basis for comparison with studies carried out in the West. The extent of “universality” or culture specific psychological aspects of infertility could only be inferred from such unique Iranian investigation. Thus the present thesis aims to make an original contribution to the psychological aspects of infertility and infertility literature by focusing on the Iranian couples. In particular it aims:

- To develop the most appropriate measurement tools that are validated for Iranian culture.
- This is to avoid bias in measurement and to credit the researcher with valid and reliable data/information.

- To ensure an appropriate design in which the psychological reactions of both partners are examined and not just focusing on only men or only women to ensure that research is conducted on an appropriate and representative sample size, and in particular to ensure that the methodology incorporates investigations both prior to diagnosis of infertility, during treatment and after treatment.
- To examine whether there are any predictable psychological (and social) variables that may have contributed to a successful conception.

As a result the research addressing the above issues could properly be argued to develop in 3 phases:

Phase 1: To develop the questionnaire and administer it to a general population for the purpose of validity and reliability measures.

Phase 2: To administer the validated questionnaire to patients and appropriate control groups in clinics in Iran at three different time scales namely: prior to diagnosis of infertility, during treatment and after completion of treatment.

Phase 3: To monitor the infertile patients examined in phase 2 and examine their psychological and social responses of those who conceived with those who never achieved conception.

The outcomes of phase 1 resulted in the development of the 85-item questionnaire based on a Likert-type scale responses ranging from 1 strongly agree to 4 strongly disagree. The 85-item questionnaire measures five factors: psychological distress, social extroversion, marital satisfaction, attitudes towards modern medicine and attitudes towards religion.

The outcome of phase 2 resulted in having data from 37 patients couples and 10 couples as the control group. The follow-up research in phase 3 revealed that 7 out of 37 infertile couples eventually conceived. Their responses to the questionnaire were examined in relation to the 30 couples who did not conceive.

Some of the main findings as reported and discussed in chapters 7 and 8 were as follows:

The results of psychological distress scores generally indicated that indeed being infertile is associated with a greater degree of psychological distress before, during and after the IVF treatment. This finding is true for both genders. The degree of this psychological distress, however, is significantly greater for women. Parallel findings have also been reported from research on Western patients. However, in relation to Iranian patients, it was also found that gender, marital satisfaction, attitudes towards modern medicine and religious beliefs were also seen as main predictors of psychological distress. Although path analysis showed that gender is the main contributing factor. Lower levels of marital satisfaction and low trust in modern medicine were associated with greater psychological distress. Whilst for those patients with greater religious beliefs there was evidence of greater psychological distress. Another universally supported finding on Iranian patients was that being diagnosed as either male cause or the cause related to both partners created more psychological distress than the cause of infertility being labelled as female cause.

Of the above predictors of psychological distress marital satisfaction played a more significant role for women patients, whilst for men patients none of the contributing variables were found to be significant.

The results of social extroversion revealed that although the patients data shows a significantly more socially withdrawn levels than the control group their scores are nevertheless comparable to the norms before and after treatment (the possible reasons for this rather surprising aspect of the finding are discussed in chapters 7 and 8).

The main predictors of social extroversion for infertile patients was marital satisfaction. However, lower levels of marital satisfaction and undergoing treatment were associated with a greater degree of socially withdrawn behaviour.

The seven couples who eventually conceived scored significantly lower on the psychological distress scores than those who did not conceive. This finding was true for both male and female patients and seems to parallel similar findings on Western patients.

The implications of these findings, in particular in relation to parallel research on psychological and social aspects of Western infertile couples, and methodological considerations for follow up investigation are discussed in chapters 7 and 8.

2 Chapter 2: Definition, Prevalence, Diagnosis and Psychological and Social Aspects of Infertility

“Failure to conceive after one/two year(s) of regular, unprotected intercourse or the occurrence of two consecutive natural miscarriages or stillbirths is classified as infertility.”

(WHO, 1993a,b)

2.1 Preface

The main objectives of part 1 of this chapter are:

- to highlight the importance of what is defined as being infertile;
- to draw attention to the growing universal statistics on infertile people;
- to discuss possible causes of infertility;
- in particular the argument on whether psychological factors are the cause or the consequence of infertility.

In part 2, the different facets of psychological aspects of infertility as have been highly cited in the literature namely: depression, anxiety, marital and sexual relationship, and gender role in terms of its relation to parenthood, will be discussed in the light of available studies. As will be explained in chapter 4, a main weakness of psychological literature on infertility is that there is no single theory that explicitly explains why there should be such psychological behaviour associated with being infertile, nevertheless theories from the field of sociology and psychology have often been discussed as ways of explaining psychological and social extroversion associated with being infertile. In part 2 of this chapter, literature pertaining to these theories and its relevance to infertility will be described.

2.2 Definition and incidence of infertility

According to a “generally acceptable” definition (Shapiro, 1988; Greenhall & Vessey, 1990; WHO, 1993a,b) infertility is usually defined on a pragmatic basis as failure to conceive after two year(s) of regular, unprotected intercourse or the occurrence of two consecutive natural miscarriages or stillbirths. Therefore if a man or a woman, or both as a couple, fit into the framework of the above definition this would constitute an infertile statistic. However, this definition by WHO (1993a,b) is different to the definition by the US medical system in which a couple is considered as infertile after only one year of unsuccessful attempts to achieve pregnancy (Chandra & Mosher, 1994). It has been claimed by a United Kingdom Government report (Warnock, 1984) on human fertilisation, stating that “we were surprised at how few data there were on the prevalence of infertility.....where figures were available they were often out of date and of dubious relevance” (Greenhall & Vessey, 1990). Consequently, this direct labelling of a person as infertile according to the above definitions cannot be appropriate as it complicates the true statistic of infertile people world-wide (Greil, 1991).

2.2.1 World-wide

The Health World Organisation has conducted research on the prevalence and management of infertility in some developing countries (WHO, 1991). Estimates of the rate of the infertility mainly come from studies of Demographic and Health Surveys and World Fertility Surveys (Ericksen & Brunette, 1996). In fact, there are only indirect estimates available in the developing countries (Sundby, Mboge & Sonko, 1998). Although, official statistics on the rate of infertility produced by the research bodies may be lacking in some appropriate measurement criteria, it is essential to use them because they are the only available statistical materials. However, according to Greenhall and Vessey (1990), there is still considerable variation world-wide in the official statistics. According to Greenhall and Vessey

(1990) there are at least four major factors that need to be examined carefully when looking through the statistics of infertility:

1) information on sexual and contraceptive behaviour of the population under investigation, may be inadequate; 2) couples may not test their fertility in the way implied by the above definition, i.e., using contraceptives all the time or change partners or the frequency of intercourse; 3) must be a classification into primary (those who have never had a biological child) and secondary infertility (those who have had at least one previous documented conception); 4) finally Greenhall and Vessey argue that the relevance of a couple's desire for children must also be taken into consideration. For example, some fertile couples decide to stay childless.

Also important to note is that most reports showed that the percentage of childless infertile couples has increased from 14.4 in 1965 to 18.5 now (National Centre for Health Statistics, 1995). According to Lapane, Zierler, Lasater, Stein, Barbour and Hume (1995) prevalence of infertility ranges from 8% to 33%, depending on the population and criteria employed in its definition. A very recent, similar statistic was offered in which estimates the world-wide, lifetime prevalence of infertility from 13.7% to 24% and majority of studies agree on an overall rate of 15% (Benson & Robinson-Walsh, 1998).

2.2.2 Increase in the numbers seeking infertility treatment

In the US, although the number of infertile couples has not necessarily risen drastically in recent years, the number of couples who have decided to consult medical treatment has increased very fast. There was an increase in the number of visits to private physicians for infertility related consultation, from approximately 600,000 in 1968 to 1.6 million in 1984 (US Congress, Office of Technology Assessment, 1988). The reasons for this increased demand are: 1) couples with primary infertility are twice more likely than those with secondary

infertility to seek services; 2) there are more services available for infertility; 3) there are more advances in diagnostic and treatment techniques; 4) the number of infants available for adoption in some states has decreased; 5) women who are career minded, tend to marry late and this has been on the increase; 6) individuals are more aware of the new reproductive technologies and expect to be able to control their reproductive histories (Aral & Cates, 1983; Hirsch & Mosher, 1987; US Congress, Office of Technology Assessment, 1988).

2.3 Causes of infertility and definitions of key terminology

2.3.1 Preface

Causes of infertility could be either purely biological or could be due to psychological factors. It is reported that only approximately 5% of infertility are diagnosed as emotionally determined (US Congress, Office of Technology Assessment, 1988). However, estimates of how many could be due to psychological factors are also variable, ranging from 5% (Seibel & Taymore, 1982; Burns et al., 1999) to 50% (Eisner, 1963). And some indicate that the highest estimate rarely exceeds 18% (Harrison, O'Moore & O'Moore, 1981). The biological literature is reviewed first, followed by different manners in which psychological variables may be associated with infertility.

2.3.2 Biological causes

The aetiology of infertility can be divided into four major categories: 1) the female factor; 2) the male factor; 3) combined male and female factors; and 4) unknown factors. Recent statistics report that approximately 40% of infertility are due to a female factor and 40% to a male factor (Stanton & Dunkel-Schetter, 1991; Begley, 1995). About 10% of infertile couples have joint problems (Mosse & Heaton, 1990). In 10-15% of infertile couple no diagnosis can be made after a complete investigation (Franklin & Brockman, 1990). This

category referred to as the “unknown” could be partly defined as psychogenic. This refers to a group of patients whose infertility remains unexplained after the completion of all available diagnosis tests, no anatomical, physiological or pathological cause having been found (e.g. Templeton & Penney, 1982).

2.3.2.1 Female infertility

Blocked tubes and pelvic adhesions could be responsible for over 40% of the incidences of infertility in women (Speroff, Glass & Kase, 1994; Benson & Robinson-Walsh, 1998). The major cause of tubal problems is due to endometriosis and pelvic infections. The treatment includes surgical operation to open the blocked tubes. Sometimes repair is impossible and IVF is useful (Benson & Robinson-Walsh, 1998). According to Benson and Robinson-Walsh (1998) endometriosis is a uterine problem manifesting with considerable lower abdominal pain. With this condition, tissue identical to the lining of the uterus begins to grow inside the abdomen. Eventually, cells implant on the outside of the uterus, on the ovaries or bowel, and continue to grow just as if they were inside the uterus. Every month these cells bleed, just as they would if they were on the uterine lining, but since the blood cannot escape through the vagina it flows into the pelvic cavity and creates scar tissue. Proper treatment of the less severe forms of endometriosis allows some 70% of sufferers to become pregnant. Interruption in the production and release of eggs (Ovulatory failure), could cause 40% of the fertility problems in women (Azziz, 1993). The hormonal system controls ovarian function and may undergo disturbance causing infertility. The egg may not be mature properly, or may not be correctly released. It is due to an imbalance female hormone. The treatment basically starts with administering a hormone based drug like Clomiphen, which can induce ovulation in nearly 80% of all women with ovulatory failure disturbance. However, if the treatment is not successful, IVF is an option (Benson & Robinson-Walsh, 1998).

2.3.2.2 Male infertility

The aetiology of male infertility is determined by four primary categories which are as follows: coital factors (e.g. ejaculatory incompetence), semen factors (e.g. sperm antibodies), defects in spermatogenesis (e.g. varicocele, exposure to radiation, infections, sexually transmitted diseases; or illness), and ductal factors (absence of the vasa deferentia- the tube through which the spermatozoa pass from the testis to be stored in the seminal vesicle to become part of the semen (The American Fertility Society, 1991). About 30%-40% of infertility in the male reproductive system is associated with such problems as oligospermia (scarcity of sperm in the semen), azoospermia (absence of sperm in the semen), high viscosity of semen, low sperm motility, and low volume of semen (Stanton & Dunkel-Schetter, 1991). However, male infertility can arise from a variety of causes such as a mechanical blockage of vasa deferentia, lack of, or inadequate sperm function which may be the result of chromosomal disorders, environmental factors, hormonal imbalance, previous infections such as mumps, and maldescent or torsion of the testes (Neuberg, 1996). The treatment used for male infertility includes hormonal therapy, washing sperm (Smolev & Forrest, 1984), surgery on blocked tubes (Hudson, Baker & de Kretser, 1987), IVF (Ballantyne, 1991), GIFT- Gamete Intra-Fallopian Transfer (Winston, 1989), DI- Donor Insemination (Mason, 1993), ICSI- Intracytoplasmic Sperm Injection, MESA- Microsurgical Epididymal Sperm Aspiration, and TESE- Testicular Sperm Extraction (Benson & Robinson-Walsh, 1998).

2.3.2.3 Combined male and female factors

About 10% of infertile couples have joint problems (Mosse & Heaton, 1990). When both partners have problem in terms of fertility, both are responsible for infertility. For example, the female partner could be diagnosed as having tubal or ovulatory dysfunction, whilst the male partner is diagnosed as having oligospermia.

2.3.2.4 Infertility of undetermined causes

About 10-15% of the couples attending infertility clinics have no cause found for their infertility (Franklin & Brockman, 1990). See Table 2.3.1, for a summary of percentages of infertility according to the original causes.

Table 2.3.1 Percentages of infertility as due to a specific cause

| <u>Female factors</u> | Percentage |
|--|-------------------|
| Tubal & pelvic pathology | 40% |
| i.e. endometriosis, pelvic infection (Benson & Robinson-Walsh, 1998) | |
| Ovulatory dysfunction | 40% |
| i.e. PCOS- pituitary control hormones (Azziz, 1993) | |
| Anatomical factors | 10% |
| i.e. congenital malformations of genital tract structures (Fedele, Bianchi, Marchini, Franchi, Tozzi & Dorta, 1996) | |
| <u>Male factors</u> | |
| Hormonal disturbance (Bellina & Wilson, 1986) | 10% |
| Various sperm problems (Leese, 1988) | 90% |
| Azoospermia (Leese, 1988) | 5% |
| Oligospermia (Winston, 1989) | 70% |
| Sexual dysfunction | >1% |
| (Winston, 1989) | |
| Coital factors/anatomical | |
| Ejaculatory incompetence, hypospadias (Mason, 1993) | small |
| Ductal factors | |
| Absence of the vasa deferentia (Bellina & Wilson, 1986) | <10% |
| Varicoceles (Conkling, 1991) | 35% |
| Post- coital factors | |
| Mucos-spermatozoa (Conkling, 1991) | 10% |

2.4 Psychological Factors and Infertility

“Her illness represents a psychic conflict sailing under a gynaecological flag.”

(Sandler, 1968, p51)

2.4.1 Preface

With respect to the psychological aspects of infertility the following hypotheses will be reviewed: Either psychological factors could be a cause of being infertile, or they could be a consequence (or both). Thus many infertile patients are already stressed not necessarily due to their infertility problem but more so in view of their previous psychological profile. This is generally referred to as the psychogenic hypothesis which is explained in the next section. These different hypotheses will be dealt with at length in the remaining part of this chapter and in the next chapter. Furthermore, one could also explore the hypothesis that with the development of new treatment techniques of infertility psychological aspects of infertility may be either triggered to a new level or eliminated as a result of undergoing actual treatment process. The latter topic will be discussed in the next chapter.

The general structure for the review in the next section takes a historical review of research on psychological factors (largely based on research on personality factors) as possible cause of infertility, with the general conclusion being a) most of the studies based on psychological factors being a cause of infertility could be criticised on methodological grounds b) although there are some conflicting statistics reported the general consensus is that if anything only around 5% of incidence of infertility could be linked to psychological factors.

2.4.2 The rise and fall of the Psychogenic hypothesis

There are groups of patients whose infertility remains unexplained after the completion of all available diagnostic tests and no anatomical, physiological or pathological causes are

found (Tempelton & Penney, 1982). Thus for these groups of patients some may argue that perhaps “psychological” factors may be the cause of their infertility (Tempelton & Penney, 1982). Indeed the early literature dating back to 1935 and stretching to the mid sixties is dominated by researchers who believe with the above explanation i.e. a sizeable percentage of people who cannot conceive, suffer from psychogenic problems (see for a review, Noyes & Chapnick, 1964). To understand the line of thinking of the early researchers two interesting arguments made by De Watteville (1957) seem to provide some interesting observations. In his paper De Watteville (1957) argues that researchers who examined the testicles of men who were convicted and executed shortly after committing rape found that, even in cases where the rape had resulted in pregnancy the sperm was absent during the time of execution. Similarly, it was reported that the uterus of those women sentenced to death, begins to bleed within hours, no matter where she is in her menstrual cycle. The rapidity of these processes, caused by fear of death, suggested a neurogenic, rather than hormonal, a mechanism that is crucial for conception but is absent at times of great psychological distress. Therefore, this further reinforces the belief that human reproductive organs respond badly to signs of great psychological distress.

During the late sixties and early seventies, findings of a few well-known studies seemed to support the idea that emotional and psychophysiological tension can contribute to the development of functional infertility (Seward, Wagner, Heinrick, Block & Meyerhoff, 1965; Lubke, 1971). In line with the evidence from executions of men and women it was concluded that psychological states such as depression, anxiety and fear may have an impact on physiological, including endocrinological, functioning, and therefore this reduce the likelihood of conception (Pepperell, Hudson & Wood, 1980). Some believed that infertility was a defence mechanism and that if this intra-psychic conflicts regarding parenthood and pregnancy is

resolved, it could lead to pregnancy (Ford, Forman, Wilson, Char, Mixon & Scholz, 1953). Some other authors believed that infertility was a manifestation of total personality disturbance (Sandler, 1968).

Nevertheless the early literature came under scrutiny by Noyes and Chapnick (1964) who did a literature review for evidence that psychological factors influence fertility in the so-called normal infertile couple. Of a large number of English language references encountered in periodicals, texts, and the Current List of Medical Literature (at that time), 235 papers, written between 1935-1963, were selected because the title or subject seemed to be related to psychological aspects of human fertility. Of 235 surveyed, 75 papers written by 61 different senior authors in areas of medicine and psychology were critically analysed as the substance of this paper. Realising that the literature might be evaluated very differently by readers with different backgrounds, each of the 75 papers was read and evaluated by a professor of obstetrics and gynaecology; and a graduate student of psychology. Both readers agreed that a large majority of authors favoured the proposition that psychogenic factors caused infertility, and that only one paper clearly stated that null hypothesis. A few articles contained no recognisable hypotheses, only a discussion of the pros and cons. Several authors arrived at the hypotheses that because major psychic disturbances are known to cause amenorrhea- absence of monthly period/menstruation and impotence; psychic involvement must also cause infertility, though the mechanisms remain unknown. It was found that materials and methods were rarely well presented in these papers and also they usually studied case histories, objective testing with standardised tests were rare, and the use of controls rarer still. Thus the two reviewers concluded that 62 of the 75 papers were classed as contributing little to knowledge. Finally the result of the review on the whole showed that the evidence presented in the studied papers was scanty, poorly organised, and poorly analysed. The literature was quoted unsystematically.

Moreover, all the observations in those papers were mainly psychoanalytically oriented and focused exclusively on women and primarily examined dreams, links of heterosexual libido to oestrogen phases, and possible hostile role-identifications with mothers.

The literature post Noyes and Chapnick's (1964) critical review has nevertheless seen some further support for the view that psychological factors may be a cause of infertility. Many researchers have hypothesised that depression, anxiety, and fear influence physiological and endocrinological functioning and so reduce the likelihood of conception (Pepperell et al., 1980).

In a 1972 study by Mai, Munday and Rump it was found that infertile women have more hysterical and aggressive personality than controls as well as more disturbances in psychosexual orientation.

Another recent support for examining a link between psychological factors and infertility came from a study by Stoleru, Teglas, Fermanian and Spira (1993) who studied 63 couples of unknown infertility status recruited from the press. Those who conceived compared to those who did not conceive. They were measured following cessation of contraception and 12-18 months after first assessment. They reported that certain male psychological factors did distinguish couples who achieved a pregnancy within a year of testing from those who did not, thus further supporting the relationships between emotional factors and infertility.

Similar results have also been reported in a study by Mikulincer, Horesh, Levy-Sheriff, Manovich and Shalev (1998) in which 14 out of 80 infertile women who succeeded in becoming pregnant one year after the completion of the research questionnaires had husbands who showed greater degrees of attachment. In particular it was reported that pregnancy likelihood was significantly related to men's secure attachment and psychological well being. This means that men's general scores on Hazan and Shaver's (1987) Attachment Style

Questionnaire (an instrument which describes how people feel in close relationships) was positive, indicating men had good secure attachment and psychological well-being.

If the above observations hold it may follow that by introducing techniques which help to reduce the level of stress it may have an impact on pregnancy likelihood (Domar, 1997). Indeed a study by Domar, Seibel and Benson (1990) examined the effect of relaxation exercise for infertile women and reported that this technique increases the probability of a pregnancy in women with mainly unexplained infertility. In a later study by Domar, Zuttermeister, Seibel and Benson (1992), 52 infertile women participated in a ten-week behavioural treatment programme including relaxation response training and stress management techniques. Not only did the women show significant declines in psychological distress after participating in this programme, but 16 (32%) of them became pregnant. However, in both studies the authors failed to compare the conception rate with a control group. Thus questions may be raised as to the relationships between level of stress and pregnancy likelihood.

2.4.2.1 Research not supporting the links between psychological factors and infertility

Garssen, Duyvis, Everaerd, Hogerzeil and Hamerlynck (1989) have argued that in case of unexplained infertility a significant number of patients, however, do become pregnant whether or not they engage in any relaxation therapy, thus once again it would be premature to say that these studies demonstrate that stress is causally related to infertility.

Further contradictory evidence that indicates no relationship between pregnancies and psychological health could be found in the writings of Schover, Greenhalgh, Richards and Collins (1994) and Slade et al. (1997).

The idea that certain personality traits such as low self-concept, role conflict, guilt, and aggressive behaviour are associated with infertility was tested in 1982 by Brand, Roos and van der Merwe. A group of functionally infertile women (22) with unexplained or idiopathic

infertility, were compared to a group of women with organic pathology (32) whose infertility was due to an identified physiological source, and to a group of women (5) who were fertile but whose husbands had abnormal spermatogenesis. The results demonstrated a lack of fundamental differences in the three groups tested. Finally, it was found that personality measures and psychological distress measures cannot generally distinguish between individuals with organic infertility and functional infertility.

In a more controlled research, in order to explore further the hypothesis that some cases of infertility are psychogenic, Edelmann, Connolly, Cooke and Robson (1991), investigated psychology of patients presenting with primary infertility at the time of their initial visit to an infertility clinic in Sheffield. Measures of personality and psychopathology were administered to the infertile group and to three comparison groups of proven fertility, two of which were preparing to undergo minor surgical procedures associated with sterilisation. The infertile group was subsequently divided into five subgroups on the basis of investigations made over the ensuing year (female cause, male cause, both cause, conceived, unexplained). The absence of any differences between the subgroups from the infertile sample on the measure suggests that anxiety is a consequence rather than a cause of infertility.

Other sources of evidence contributing to weakening the psychogenic position comes from Winston (1989) who argued that conception can even occur after rape and in young adolescents highly anxious about their first sexual encounter and the possibility that they may conceive.

Furthermore, Seibel and Taymore (1982) reported that a review of the literature shows that no evidence could be found to support the hypothesis that adopting a child itself enhances the possibility that the adopting couple will conceive. In a large study by Aaronson and Glienke (1963) cited in Costigan (1992), 1400 couples who adopted children were sent questionnaires,

and out of 388 who responded, only 2.9% achieved pregnancy after adoption.

Edelmann and Golombok (1989) explored the available evidence examining the link between psychological stress, prolactin levels and failure to conceive in the cases of unexplained infertility and concluded that there is need for a closer relationship between psychological and endocrinological research. However, the main problem with direct testing of the psychogenic hypothesis remains in the difficulties of establishing causal relationship, even with strongly designed research methodologies.

Brand et al. (1982) and Wright, Allard, Lecours and Sabourin (1989) looked for personality differences between the infertile and the non-infertile. It was found that personality measures and psychological distress measures cannot generally distinguish between individuals with organic infertility (infertility with an identified physiological source) and functional infertility (unexplained or idiopathic infertility). However, even where differences have been found, it is usually impossible to demonstrate that psychological distress is the causal factor. More extensive reviews echo this claim. Edelmann and Connolly (1986) and Edelmann and Golombok (1989) have attempted to review a significant number of studies on psychology of infertility, and concluded that there are a number of methodological problems with many of these studies and it is difficult to unravel whether certain psychological characteristics predispose couples to become infertile or whether infertility leads to psychological problems.

However, as mentioned above, some recent studies are in support of the fact that emotional distress is not related to subsequent pregnancy. Slade et al. (1997) conducted a longitudinal study on emotions related to IVF treatment. It was reported that although the patients' initial emotional assessment were not related to subsequent pregnancy, but at the follow-up those women who conceived were less depressed and more positive about their relationship than those women who did not conceive. Finally they concluded that there was not relationship

between psychosocial factors and treatment outcome. However, the conclusion from Slade et al.'s (1997) study should be taken cautiously as the number of the couples decreased from 144 to 42 pregnant and 14 non-pregnant. Couples who did not complete all available treatment, were removed from the study and there was no information available why these couples withdrew from the programme. Indeed this information could be important in predicting psychological functioning during and after IVF, or the outcome of IVF.

It seemed clear that some couples with unexplained infertility would show both psychological and biological evidence of elevated anxiety in relation to their fertile counterparts. But there were two questions to answer; 1) whether this anxiety is present before their awareness about their difficulties concerning conception? or 2) whether it is a reaction to their subsequent investigation and treatment? (Edelmann & Golombok, 1989). Edelmann and Golombok (1989) concluded that assessing the couples' psychological and biological stress at an appropriate time is not easy, but it will definitely provide the researchers with some exciting collaborative possibilities for the future.

2.4.2.2 Medical advances and the Psychogenic theory

Medical advancements have provided a further blow to the psychogenic hypothesis. With the developments in medical science and with doctors being able to discover the causes of many more previously categorised as "unknown" infertility, the psychogenic theory and its statistic of affecting up to 50% of the cases has lost more ground to critics. This could be seen in estimates of how many might be due to psychological factors from 50% (Eisner, 1963) to the more recent 5% (Seibel & Taymore, 1982; Burns et al., 1999). However, such shifts in statistics do not mean a total absence of relationship between psychological factor and infertility.

Greil (1997) argues that this view (psychogenic hypothesis) has not been popular in recent

years with researchers, counsellors, or the infertile themselves, primarily because the psychogenic interpretation of infertility has come to be seen as a mechanism for minimising the reality of the suffering associated with infertility and as a means of blaming victims for their own suffering, especially the women. Indeed, the psychogenic hypothesis fell into disfavour partly as a result of the increased ability of reproductive medicine to diagnose and treat infertility problems (Burns et al., 1999), and partly the inability to establish strong causal relationship studies suffering from a number of methodological shortcomings. It is safe to say that the psychogenic hypothesis is now rejected by most researchers (Greil, 1997).

2.4.3 Conclusion

1) The psychogenic hypothesis if true is affecting a smaller proportion of infertility related statistics than previously thought, and with advances in medical sciences it may lose even further ground. More discussion on the psychogenic model is made in section 2.4.2.

2) Any further research trying to establish a causal link between psychological factors and infertility requires an ingenious design that could clearly establish such links.

2.5 Psychological and social consequences of infertility

“For couples who remain infertile the loss of something or someone of great symbolic value is the most difficult to deal with. Paradoxically, the couples yearn for that may never be and mourns over the child that never was. Unlike other losses that people experience in their lives, this loss has nothing tangible to represent it. There are no formal grieving rites, as one would find at a funeral, yet the pain is the same. They are not considered bereaved, so they suffer alone.”

(Mahlstedt, 1985, p340)

2.5.1 Preface

As argued previously, the psychogenic hypothesis and the possible impact that psychological variables might play a significant role in “causing” infertility, is still a debatable issue. However, apart from a handful of studies showing little or no difference between fertile and infertile participants in their psychological behaviour (e.g. Mai & Rump, 1972), there is almost a universal agreement that being infertile constitutes a life time of psychological and socially adverse reactions (e.g. Golombok, 1992; Greil, 1997). What, however, constitutes “Psychological and Social” aspects of infertility has been reported in the literature in different facets and with various degrees of intensity. Psychological factors such as depression, anxiety, emotional reactions, feelings of loss of control, effects on self-esteem, identity, and beliefs have been the main topics discussed. Social aspects include effects on social network interactions, family and friends functioning, marital and sexual satisfaction. These will be discussed later in this chapter (see e.g. Golombok, 1992 for a review). Moreover it will be argued that to this date no single theory has strongly been favoured by researchers to explain reasons for such reactions thus much of the work reviewed here is exploratory in nature (Greil, 1997).

2.5.2 Psychological consequences

The early research was more concerned with using personality measures as an indication of differences in psychological behaviour of fertile and infertile participants. Mai et al. (1972) used psychiatric interview, and Mai and Rump (1972) made use of a personality scale namely neuroticism (Neuroticism Scale Questionnaire- Eysenck, 1947) which is argued to show a person's high levels of anxiety and emotional disturbance and compared the responses of infertile men and women with those of a fertile group. In Mai and Rump's (1972) study, the participants were 47 infertile married women, 94 fertile married women, 47 husbands of the infertile women, and 82 fertile husbands. The results in both studies showed that neither infertile wives nor husbands differed from the fertile control groups in mean neuroticism scores. However, in Mai et al.'s (1972) psychiatric interview it was determined that infertile wives exhibited significantly more hysterical and aggressive personality disorders and some evidence of ambivalence and difficulties concerning sexual relationship.

In an unpublished study by Carr (1963) that used the Minnesota Multiphasic Inventory- MMPI (Hathaway & McKinley, 1951), the findings showed that infertile women were more neurotic, dependent, and anxious than fertile women.

In contrast to Mai and Rump's (1972) findings, however, significant differences on neuroticism scores of infertile women and men were reported in a study by Platt, Ficher, and Silver (1973). In their study of 25 infertile couples and 15 fertile couples, infertile women (not infertile men) showed greater levels of anxiety and emotional disturbance than the fertile group, although both infertile husbands and wives experienced a threat to their self-concept and self-esteem, and a loss of sense of personal control.

The difference, however, between the above studies is that whilst a measure of personality namely neuroticism seems to produce a "null" effect between fertile and infertile participants,

yet examining “psychological” aspects in terms of anxiety and emotional disturbance between the two mentioned groups yields very significant differences. Follow-up researchers have also observed significant differences between the fertile and infertile groups when the subject of “psychological” reaction has been studied and defined in terms of emotional turmoil, sexual dysfunction, impaired self-esteem and self-image, grief, irritability, depression, and anxiety (Freeman, Garcia & Rickels, 1983; Lalos, Lalos, Jacobsson & Von Schoultz, 1985; Mahlstedt, 1985; Ellsworth & Shain, 1985; Goodman, 1986; Leiblum, 1987).

When Platt et al. (1973) compared infertile couples to fertile couples they also found that infertile individuals experience a loss of control. Infertile couples perceived themselves as controlled by external forces, as assessed by Rotter’s (1966) I-E Locus of Control Scale. On a similar line of research using more appropriate controls, Lalos et al. (1985) studied the emotional and social impact of infertility as well as elucidating how a couple’s current life is influenced by the infertility experience. They obtained information from 30 couples (30 infertile women with tubal damage, and 29 fertile men) who were compared to control groups of medical students, pregnant women, clinically depressed patients, and long-term users of contraception. The infertile couples did not differ significantly from the control groups on frequencies of psychiatric symptoms. However, intragroup reporting on the frequency of psychiatric symptoms indicated that infertile women as a group had more symptoms than male partners with extreme differences in levels of fatigue, anxiety, feelings of inferiority, depression and tachycardia experiences. Lalos et al. (1985) concluded that “the many symptoms and emotional problems in these (women) appear to reflect the burden of infertility rather than personality characteristics” (p91).

To this end when considering the above review one may suggest the following observations:

- There has soon been a shift in focus, on more “infertility” specific “psychological” aspects, as

opposed to seeking out significant causal personality differences of the infertile (Platt, 1994).

- These infertility specific psychological reactions or consequences may manifest themselves in different facets and intensity. However, in addition to psychological factors there is the issue of social aspects, as well as such matters as quality of life and marital and sexual satisfaction.
- There is a consideration that if one finds a “null” effect on a particular test score between infertile and fertile group (e.g. Mai and Rump’s 1972 on neuroticism scale) this is more likely to reflect aspects of poor methodology or use of inappropriate and specific questionnaire than absence of “psychological” aspects of infertility.
- Finally men and women’s psychological aspects of infertility may differ significantly from each other.

Capitalising on what has been said above over the past 25 years or so the literature has been compiled with a number of clinical, “experimental”, case studies and anecdotal reports, investigating the different facets, degree and intensity of “psychological” reactions amongst both infertile men and women; some of which, when reviewed here, has been extracted directly from their original writings.

Menning (1975) argued that infertility is, “a complex life-crisis, psychologically threatening and emotionally stressful”. Other, referred to as “roller-coaster” and chronic bouts of depression and anxiety experienced (McEwan et al., 1987; Atwood & Dobkin, 1992; Hynes, Callan, Terry & Gallois, 1992). Freeman, Rickels, Tausig, Boxer, Mastroianni, and Tureck (1987), found that half of their sample of infertile couples described infertility as the most upsetting experience of their lives, while 80% of Mahlstedt, Macduff and Bernstein’s (1987) sample reported that their experience of infertility was either stressful or extremely stressful.

Other studies have reported evidence of elevated anxiety levels (Paulson, Harrmann, Salerno & Asmir, 1988; Van Balen, Trimbos-Kemper, van Hall & Weeda, 1989), or depression scores

(Link & Darling, 1986; Van Balen et al., 1989) for some infertile patients when compared with controls. There is also a substantial agreement of high degree of depression associated with being infertile. Mazor (1984) reported on childless couples seen in her clinical practice, finding depression of both partners a consequence of continuous unsuccessful attempts to conceive. Freeman et al. (1985) reported that almost half of the group of women and men, waiting for admission for treatment programme appeared to have a clinical depression. Link and Darling (1986) found that 40% of women and 16% of men had scores indicative of clinically significant depression.

Capturing all said above under the umbrella of “stress” Connolly et al. (1992) maintained that for many no doubt this is so, though the degree of stress and the extent of the threat perceived by the individual will vary as will the individual’s response to the situation. Indeed Connolly et al. (1992) reported that as time goes by the degree and intensity of feelings may decrease. Connolly et al. (1992) assessed 130 couples presenting with primary infertility at their initial visit to an infertility clinic. Of all these couples, 116 couples were assessed on the second occasion some 7-9 months later when in most cases the medical tests were complete. Scores on tests of anxiety and psychiatric morbidity declined between the first and second assessment except in the case of men who were diagnosed with a fertility problem. Men with higher state anxiety scores had significantly lower marital adjustment scores at the time of initial assessment but as time progressed there was more evidence of marital adjustment. Furthermore, in another study by Hirsch and Hirsch (1995) who investigated the long-term psychological effects of infertility, it was revealed that as time goes by the infertile couples’ distress level declines and their marital and sexual relationship improve. In this study the couples were recruited by an advert in the newsletter of a nation-wide infertility support group, and they mostly had passed the stage where the treatment or investigations were involved.

They reported that they could cope better than before since being in contact with the social support network. As it is explanatory, the discrepancy between this kind of a report and those reporting deteriorating condition for infertile couples over time, could be due to the type of couples who take part in the study (those who are involved in social network and those who are not) and also when these couples are investigated (either when they are going through the infertility investigation and treatment or they have passed this stage long before).

However, elsewhere, Menning (1980) has drawn attention to possible parallels between the psychological consequences of infertility and general grief reactions. Berger (1977, 1980) goes so far as to suggest that, “a sense of despair must plague every couple who seek help with an infertility problem.” Other authors (Bresnick, 1981; Pfeffer & Woollet, 1983; Keyes, 1984) refer to health problems, loss of self esteem, feelings akin to mourning, depression, guilt and frustration, all associated with failure to conceive. Chronic, cyclical, pain, loss, grief, fear, isolation, sorrow, disappointment, anger, depression, sexual frustration are some of the emotional hazards known to be a part of the common story told by the infertile person (Platt, 1994). Even for those couples who are ultimately successful with the aid of medical technology, infertility remains a messy and painful life experience (Platt, 1994).

2.5.2.1 Psychological consequences- any theories?

According to Menning (1980) the crisis of infertility may evoke a predictable pattern of feelings, including 1) surprise, 2) denial, 3) anger, 4) isolation, 5) guilt, and finally 6) grief and acceptance. This would be in line with the Stage theory which is driven from Crisis theory (Kubler-Ross, 1969). Crisis theory carries implications for understanding psychological adjustment, in that the experience and expression of emotions in the grief process is hypothesised to be essential for successful adjustment (Dunkel-Schetter & Stanton, 1991).

In earlier literature, two separate studies by Menning (1980) and Wilson (1979) reported that

infertile patients have a pattern of feelings, which are similar to the emotional stages described by Kubler-Ross (1969). In both studies the focus was on pattern and sequence of emotions to infertility. Furthermore, Shapiro (1982) analysed the mourning stages by Kubler-Ross (1969) in relation to the infertile couples' marital satisfaction and believes that Kubler-Ross's (1969) work on mourning process is particularly helpful for understanding the ways in which marital partners come to terms with the unanticipated life crisis of infertility. "A couple's response to their infertility can be understood both as a crisis and as a mourning process" (Shapiro, 1982, p387). Shapiro (1982) explains that in first stage (DENIAL), the crisis of infertility presents as a threat. There are many levels in which threat is perceived; threat to life dreams, to self-esteem and to image as a sexual being. Therefore, in order to support themselves against such threat, many infertile persons use denial as a way to cope with the bitter reality of infertility. Because of denial, the search for medical help is even prolonged and it may take the couple a few months before they see medical help.

The most frequent response to the helplessness and powerlessness due to loss of control over their life choices, is ANGER, which is the second stage in Kubler-Ross' (1969) framework of mourning. At this stage many couples stop enjoying their sexual relationship as they are angry and sad about the situation. This tension presents special problems for the couples; depression, emotional isolation, changes of life plans like postponing holidays, rejecting new jobs or educational opportunities because of the treatment procedures. Their anger at this stage could be stimulated by irresponsible comments by friends or families and at this stage they become isolated .

An infertile person starts to perceive the crisis of infertility as a loss, the expression of anger is mixed with feelings of intense GRIEF. In this stage the symptoms like sleepless, bad appetite, tension headaches, upset stomachs, impotence, dysmenorrhea (painful menstruation) and

amenorrhea (absence of menstruation), present. The infertile partner has a feeling of guilt and may try to encourage the other partner to find a partner with whom he/she may bear children.

It is explained by Shapiro (1982) that ACCEPTANCE of infertility and all of its implications is the last stage in the mourning process. In this stage the couple look for other alternatives like adoption or remaining childless. However, there is no guarantee that both partners reach this stage or even the other stages of mourning at the same time, together. One may be still struggling in one stage while the other mourns at a different level (Shapiro, 1982).

However, in another study later by Blenner (1990), it was shown how a substantive theory of passage through infertility treatment explains the psychosocial responses of couples to their infertility from pre-diagnosis to post treatment.

Blenner (1990) studied perceptions of 25 couples as they underwent infertility assessment and treatment. Finally eight stages were identified within the concepts of this theory: experiencing a dawning of awareness, facing a new reality, having hope and determination, intensifying treatment, spiralling down, letting go, quitting and moving out, and shifting the focus. The findings of this study are to help the nurses to gain an insight into the infertile couples' emotional experience. According to Blenner (1990) the pattern of the feelings are at 8 stages and they are as follows:

In the beginning, there was an experiencing a dawning of awareness, which occurred before any infertility problems were diagnosed. They had stopped using birth control and decided to have a child. They identified with fertile couples. They became alert and a dawning of awareness began as the women continue to menstruate each month. When a year passed by, women think of consulting a doctor.

When the couples have been through investigation and diagnosis was made, they faced a new reality. Facing a new reality, make the infertile spouse to search for cause of infertility and ask

“why me?” He/she feels guilty towards the other partner. The fertile partner tries to reassure and support the infertile partner. At this stage the couple feels different from fertile world and idealise fertility. Then they seek treatment with the thought of “what if?” These feelings continue until end of treatment. At this stage they try to share their feelings with some of their fertile friends and voluntarily childless individuals. Here, they began to encounter alienating comments that are perceived as “insensitive remarks” and “nonsense advice.” Therefore, they stop sharing feelings about their infertility.

Stage of having hope and determination begins when the couple starts having treatment with the feelings of doing something rather than not taking any action. They feel fresh, energetic and enthusiastic and when hearing negative results on some patients, do not think it may happen to them as well. They do not label themselves infertile yet.

As treatment is intensified, they very much focus on treatment and resolving treatment becomes their main goal. With being highly involved in treatment, they feel loss of control over their lives and find the experience quite stressful. Label of infertility is applied now by the couple themselves. They isolate from fertile world and feel a need to seek out other infertile couples and infertility support groups for sharing their feelings.

They spiralled down, as time passed and as there is no/less success in treatment, they feel more frustrated and depressed. They lose their energy and enthusiasm and cannot tolerate the feelings of being out of control. Anxiety is experienced. They try to avoid any occasions and functioning involving children and pregnant women.

Letting go and a turning point began when both/one of the partners experience a mental “shout down”. They begin to accept that treatment may fail and experience less “what if.” They start accepting that life is unfair and women cried less than before and come to a “dull acceptance”. Since the pressure has been too much, they attempt to regain a normal life and give themselves

a “mental vacation” stopping the treatment for a few months. They feel that they have regained control and direction in their lives during this stage. They start thinking or re-examining the options of either stay childless or adoption.

When they quit and move out, it helps them to feel free and relieved and look forward to getting on with their lives. Some couples, who quit and decide to remain childless, realise that they will never have a child. They experience grief over the loss. Those who decide to go for adoption may experience frustration toward the adoption process. Adoption process could be even as frustrating as treatment has been for the couple. Some couples who quit may return to the treatment after a year or more.

Shifting the focus happens when the couples experience a peaceful resignation and they start with new focus. Those who adopt, start focusing on the parenting needs of their adopted child. They start socialising with fertile friends who have a child and sometimes feel detached when those friends talk about their pregnancy, labour and breast-feeding. When socialising with their infertile friends, they experience a sense of loss.

In fact it is quite crucial to maintain that individual differences may even bring with themselves different stage reaction which is different to the stages mentioned above by Blenner (1990). However, since there is not a significant number of studies utilising stage theory systematically and substantially, it is immature to generalise the above findings on all infertility patients.

However, A) not many studies have evaluated Menning’s proposal in which individuals go through a set of stages of emotion when they experience infertility. B) the hypothesis that emotional expression is necessary to successful adjustment has not been evaluated. According to both of these hypotheses infertile couples are similar as a group and those who adjust successfully have similar behaviours. These “homogeneity myths” (Kiesler, 1966) promote the sort of group difference research that has been conducted thus far. Such study may help us to

predict the emotions that infertile couples may go through. Dunkel-Schetter and Stanton (1991) has criticised the literature on infertility in which they have given little attention to factors that help or hinder couples as they manage the hurdles of infertility. It has also maintained by Dunkel-Schetter and Stanton (1991) that individual variability in the infertility experience is minimised.

The failure of stage theory is just one example of how psychological theories may either be inadequate in explaining psychological aspects of infertility, or not being fully evaluated or explored in the field of infertility and infertility treatment.

Another unsupported theory is the socio-biological theory as a way to explain why there is such a strong psychological reaction to infertility. From a socio-biological perspective humans have a natural drive to reproduce in order to maximise their genetic representation in subsequent generations (Suarez & Gallup, 1985). Therefore, it should be against this natural drive when the couples decide to adopt a child or go for Donor Insemination (DI) as an option to maintain their role as parents? (Edelmann et al., 1994). If even these methods (adoption or DI) provide the couples to act as proximate parents, but because of not having genetic link to both partner or to just one, it does not fulfil the drive for genetic continuity (Edelmann et al., 1994). If theories fail to find support, it is therefore no surprise that most research in the area of infertility is exploratory and mainly descriptive and very few are qualitative in nature.

In short there is no doubt that there are serious psychological consequences associated in being infertile, this is unlike many other crises that people may encounter. However, the degree and nature of such reactions is varied amongst individuals being investigated and in particular between infertile men and women. Moreover, a specific theory cannot effectively explain such psychological reactions.

2.5.3 Gender differences in psychological consequences to infertility

Until recent years it has always been considered that if a couple is infertile it is most likely to be the fault of the woman (Abse, 1966; Sandler, 1968; Pantesco, 1986; Matthews & Matthews, 1986; Costigan, 1992). Such “medical stereotype” might have contributed to the fact that in much of earlier research women were seen to show more significant signs of psychological reactions than men (Platt et al., 1973). McEwan et al. (1987) found only 1% of men in comparison to 37% of women in their infertile sample showing scores above the threshold for psychiatric morbidity on General Health Questionnaire. Daniluk (1988) studied a sample of 45 men and 62 women who were compared on demographic variables (sex, age, religion, and socio-economic status) in addition to the identification of the aetiology of the infertility. More emotional disturbances in adjustment reactions were found in women than in men.

In fact, even when the infertility was medically pronounced as being male in aetiology, 30% of the women blamed themselves anyway and were substantially more distressed than those who did not feel responsible. Indeed the very fact that even when the true cause of infertility is diagnosed, women react more strongly (women showing greater level of distress, anxiety, and depression than men) has been supported in many other more recent research (Wright, Duchesne, Sabourin, Bissonnette, Benoit & Girard, 1991; Collins, Freeman, Boxer & Tureck, 1992; Nachtigall, Becker & Wozny, 1992).

Nevertheless it must be said that whilst men differ from women in terms of degree of psychological aspects of infertility, they differ significantly in their psychometric measures as compared to a population of fertile males. For example, Kedem, Mikulincer, Nathanson and Bartov (1990) studied the effect of suspected infertility on psychological functioning, comparing men who suspect that they are infertile with men who have no such suspicion.

Infertile men had lower self-esteem, higher anxiety and showed more somatic symptoms than fertile men.

2.5.3.1 Gender differences and quality of life

Greil, Leitko and Porter (1988) argued that husbands and wives are often less than perfectly aware of each other's perceptions of the dynamics of family life. For this reason it should come as no surprise that wives and husbands perceive and respond to infertility in radically different ways.

Abbey, Andrews and Halman (1991) conducted a study focusing on gender response differences, hypothesising that infertility has more impact on women's lives than men. The comparison was between 185 infertile couples and 90 presumed fertile couples. Infertile wives, compared to their husbands, perceived their fertility problem as more stressful, felt more responsible for and in control of their infertility, and engaged in more problem-focused coping. Infertile husbands experienced more home life stress and lower home life performance than did their wives. These differences were not found for presumed fertile couples. Link and Darling (1986) researched the emotional consequences of infertility utilising the responses of 43 couples on levels of life satisfaction. Their data (the study did not report a breakdown of the ratio of male/female infertility factors) indicated that more wives (39.5%) than husbands (16.3%) indicated clinically significant levels of nonpsychotic depression, and more generally, wives expressed less contentment with life than husbands. Such gender differences in reactions to infertility has been a noticeable issue in a study by Becker (1994) and the following is an extract from one of the interviews:

"It [infertility] became a black hole for both of us. I was happy when I was getting married, and life, to me, was consistently getting better. And she was continuously depressed. Everything was meaningless because she couldn't have a baby. And so it was a tremendous

black hole, it was a real bummer. I mean, in the broadest, deepest sense of the term. It was very upsetting to me because it was like no matter what it seemed like every time. I was, like, taking off and feeling good, and she was dragging me down. And it wasn't always that she was dragging me down but she was dragging herself down. It was contrary to the overwhelming evidence of our lives, and it was very disturbing, to the point where I said to her that it was not tolerable, anymore. And she went to a psychiatrist. She wanted to improve because she couldn't get out of it. I mean, she couldn't get out of it, and the Prozac (that was prescribed) made it worse. But it broke that cycle of depression and she got out of it. But that was terrible. It ruined our sex life. It was just like everything was going down the black hole" (p393).

2.5.3.2 Sex role theory - explaining gender differences in psychological consequences

Feminine stereotypes believe that married women must play the role as a care-taking wife and a mother (Horwitz, 1982). In the same settings men are expected to be involved in the establishment of "power" (i.e. breadwinner and dominant household figure) (Horwitz, 1982), with the cornerstone for male stereotypes being impressive sexual prowess (Zilbergeld, 1981) and winning the gene selection for the next generation (Fisher, 1982). Indeed, "proof" of that sexual prowess is a baby. According to traditional sex-role, women should value parenting, and are inadequate if they do not become mothers and gender differences in reactions to infertility may reflect this socialised difference in the importance of becoming a parent (Stanton & Dunkel-Schetter, 1991). Indeed, psychological reactions to infertility are directly related to the degree of individual's belief in this traditional reaction (Stanton & Dunkel-Schetter, 1991). For example, the individual with extreme traditional belief in sex-role will react differently to infertility compared to the individual with more liberal views on sex-role. This issue will be taken up later when the issue of cultural differences is discussed.

Van Balen et al. (1989) evaluated survey responses from 94 childless couples attending an

infertility clinic. They found a significant correlation between those who reported the strongest feelings about childlessness and levels of depression. Similarly, a relationship was found between a higher degree of “femininity” and increased levels of depression, anxiety, hostility, and generally poorer health. For women, there was the additional correlation of self-image, guilt and blame with higher scores on the femininity scales.

The use of gender and sex-role theories therefore provides a mean of exploration for understanding how both men and women respond to their infertility as well as to what extent they approximate or differ from each other (Platt, 1994). Sex roles for men and women are cast from early childhood, as men and women are socialised to learn and display unique behavioural, emotional, intellectual, and attitudinal tendencies or characteristics (Chafetz, 1974). Other religious or cultural influences can also modulate roles and behaviour of men and women. Many of these distinctions are prescribed and “emphasise the orientation of women toward social integration and men toward more impersonal or individualistic (and concrete) goals” (Gill, Stockard, Johnson & Williams, 1987). Understanding the nature of theoretical properties of gender and/or sex-role issues may offer an avenue for more carefully scrutinising women’s and men’s social role issues and sex-role identities. For example, if the cognitive expectations in our society culturally prescribe the role of motherhood as an integral component of personal fulfilment and growth, then an infertile woman would certainly be vulnerable to conflicts between a sense of role failure or inadequacy and self-esteem. Similarly for the man, if fatherhood is rewarded with praise as a capability to sire offspring, failure to do so might be a direct threat to his ego and to his socialised understanding of his masculine role (Scanzoni & Scanzoni, 1988; Greil, 1991). Cultural influences, social interests, and developmental issues are key variables. Rossi (1968) describes sex role as “having an effect on the adjustment to the transition to and role commitments of parenthood” (p29).

However, while the transition to parenthood is determined to be difficult, what happens when this “stage-task” (Erikson, 1950) process is not possible due to infertility? Further, is what happens different for women and men? Also, post-feminist thinking has dramatically shifted women’s issues over the last 20 years into the forefront in the 1990’s.

Hagen and Davis (1992) believe that traditional gender roles are creating considerable tension and stress for families and that reproductive health care remains a critical socio-political issue. Erik Erikson created an epigenetic chart that added social and cultural dimensions to Freud’s psychosexual stages of development (oral, anal, phallic, and genital). He considered parenthood part of a developmental task for both men and women, associated to the specific stage of development known as “generativity vs. stagnation”. Erikson (1950) describes generativity as “primarily the concern of establishing and guiding our next generation, although there are some individuals, who through misfortune (or psychological conflict)..., (can) not apply this drive to their own offspring” (p267). According to Eriksonian theory, a developmental failure in this stage may prohibit the successful transition for both men and women to the final stage of adulthood: ego integrity vs. despair. Erikson believed that “when the ego must face a maturational task that it is unable to master, the developmental crisis may remain unresolved. Injuries to one’s self-esteem, threats to sexual identity and other problems may result” (Erikson, 1950, p116-150). Included in the paradigm viewed by developmental theorists is the contention that only a “successful” transition to parenthood is evidence of a mature ego development.

Failure to successfully complete this maturational task had often been cited as representing the existence of a psychic conflict in the woman: the wish to be pregnant and or be a mother, opposed to the strong fears, anxieties and defences expressed in those wishes. Normal development is therefore disrupted (Platt, 1994; Christie, 1998). Researchers in the

area of infertility acknowledge that there has been great pressure for women to conform to the culturally expected role of motherhood, and that a failure to do so may be experienced as role failure reflecting the social and cultural context of one's life (Nachtigall et al., 1992). If the desire is to remain within the conventional bounds of gender identity, then infertility disorients our self-representations a key factor in our stability (Lorraine, 1990). Any degree of ambivalence or deviance may frequently be met with disapproval or condescending pity by society, creating role conflict. However, the literature on infertility and its impact on gender identity, have reported that those men who are more macho and have stronger masculine characters, as well as those women who are more feminine are able to cope better with the problem of infertility (Speer, 1969; Recely, 1973; Wetter, 1975; Pettus, 1976; Tallichet, 1977; McCurdy, 1978). These conflicting findings will be further discussed later in chapter 5, in relation to sex-role theory and infertility in Iran.

2.6 Social consequences of infertility

Generally the literature on this topic is rich on evidence that for both men and women being infertile entails such behaviour as withdrawal from social events, lack of interest in activities involving children and significant impairment of marital and interpersonal relationship (see Golombok, 1992 for a review). In this section, such evidence and theories proposed to explain them are reported.

The Social Comparison Theory states that people want to compare their own feelings and reactions with those of others in the same situation (Festinger, 1954). There are situations in which a person deliberately chooses to make a social comparison. For example, after surviving a frightening earthquake, a person may actively seek to compare his/her reactions with others and spend hours talking with neighbours and friends about their experiences (Festinger, 1954). However, there is something about infertility that is different from other

tragic events happening in one's life. "We don't share the information with other people, simply because we're ill at ease with it. It's not something that's easily handled. It's not like saying, "Oh, gee, I have an infected tooth; I'd better go to the dentist." It's something that still has somewhat of a taboo in my mind to talk about in general with people. Mostly because I'm still leery of crude comments, of having my feelings hurt. I'm reluctant to talk about it with just about anyone in the general population. Unless it's to achieve a specific goal, a purpose" (Zoldbrod, 1993, p137).

Some of the researchers (Wills, 1987; Wright et al., 1991) have emphasised the effectiveness of social support and self-help groups in reducing anxiety levels in infertile people. Some have argued that one of the major losses during infertility is the sense of alienation from friends and family (Kronen, 1995; Whiteford & Gonzalez, 1995; Imeson & McMurray, 1996). This is sad because throughout life, the majority of people perceive their social network to be a major source of help (Lieberman, 1982). So infertility becomes a hidden problem (Woollett, 1985) and the couples get very upset by the comments made by other relatives or friends who may not even mean any harm to the couple. One of the example drawn from Zoldbrod's (1993) interview could explain this:

"Rick's family was really hot and heavy into when were we going to have a family. My family wasn't quite as bad along that line. Rick's sister, in particular. Every time we'd see her, she would say, 'Well, if you don't get pregnant soon, I'm going to have a garage sale and sell all my baby stuff that I've been saving for you. It's taking up too much space.' So it got to the point where we'd just avoid his side of the family" (p143).

Interesting to note however, is that men and women describe it in a different way and behave in a socially different manner. In a descriptive study by Pengelly, Inglis and Cudmore (1995) the couples who were undergoing infertility treatment, were assessed. Both men and women

described their agony in a different way. Most women described difficulty in talking to others about their infertility. Relationships with mothers, sisters and friends (especially those with children) had become strained. Infertility was perceived as a stigma or handicap, which produced feelings of inferiority. Men feared humiliation among other men. As a group, these couples felt socially isolated, with increased pressure on the partnership to provide support. They all indicated a high level of stress, appeared vulnerable, isolated and disempowered.

Thus contrary to social comparison theory when dealing with infertile people it is expected that the opposite would happen and infertile people become socially excluded. Infertile men and women do not exchange their feelings with others thus it is hidden and aggravated unlike other disasters. The latter issue has been supported in many research (e.g. Menning, 1980; Atwood & Dobkin, 1992; Kronen, 1995; Whiteford & Gonzalez, 1995; Imeson & McMurray, 1996).

The issue of social isolation however, may shape to include a circle of infertile people as highlighted by Zoldbrod (1993) "It was really hard because, when we started trying to have kids, it was about the same time that all of our friends started trying to have kids. And I just felt really, really awful around all of our fertile friends, who were either pregnant or were having kids. It really pulled us apart from all of our fertile friends. At the same point, I ended up getting very involved in RESOLVE [a social support group for infertility in the US]. And it's amazing, but you talk to other people that are infertile, and you feel sort of instantly close to them. So, very gradually, our network of friends shifted from fertile to infertile people. We still have some fertile friends but not as many and not as close as before we found we were infertile" (p148).

2.6.1 Marital satisfaction

In a literature review by Dunkel-Schetter and Lobel (1991) it was found that effect of

infertility on marital interaction and satisfaction are reported in 50% of the descriptive articles.

The authors described the effect of infertility on marital interaction and satisfaction in four different ways. First, some couples reported increased anger, hostility, or resentment toward their spouse which may result from blaming a partner or feeling blamed, from feeling a lack of spousal understanding or emotional support, or feeling that one's spouse is not equally committed to having children (Mazor, 1978; Wilson, 1979; Mahlstedt, 1985; Woollett, 1985; Spencer, 1987).

Second, some spouses were anxious about the status of their relationship and they occasionally reported fears of abandonment or break-up (Williams & Power, 1977; Mazor, 1978, 1984; Mahlstedt, 1985). Third, some articles reported that individuals feel unable to disclose their feelings to a spouse, increasing a sense of isolation from their partner (e.g., West, 1983; Mahlstedt, 1985). The fourth type of effect on marriages is positive as opposed to negative. Several articles describe individuals who feel increased closeness, love, and support from their partners (Menning, 1980; Mazor, 1984; Woollett, 1985; Honea-Fleming, 1986; Fleming & Burry, 1988; Hirsch & Hirsch, 1995).

However, many other researchers like Kraft, Palombo, Mitchell, Dean, Meyers and Schmidt (1980), found that many marriages do not survive this crisis. Mazor (1979) concluded that many couples feel unable to openly express their frustration, disappointment, or doubts to their partner. Mudd (1980) suggests that frequently there is a complexity and duality in the motivation of each partner, with the goal of parenthood further complicated by feelings involving hopes and fears of success or failure impacting on the marital satisfaction.

During interviews, Lalos et al. (1985) found among 30 infertile women and their fertile husbands (29) undergoing treatment and surgery for tubal damage, that more than half of the couples "openly expressed that their marital satisfaction was clearly affected by infertility"

(p92), and that infertility is a stress on any marriage. In a study by Andrews, Abbey and Harman (1991), it was reported that fertility problem stress tends to increase marital conflict and sexual dissatisfaction. Another study by Slade, Raval, Buck and Lieberman (1992) reported that overall marital adjustment tended to deteriorate and also, there was a general decrease in the frequency of sexual intercourse. However, the findings were not different compare to the control group who were fertile.

2.6.2 Sexual satisfaction

Zilbergeld (1981) explains that main element of the masculine stereotype is that a man is one who has no doubt, questions or confusion about sex, and a real man knows well how to have good sex and does it so frequently. The myth is that woman is emotional in the way she needs closeness, communicating, and relating in order to get in the mood for sex, to be aroused, but that men are very simple creatures when it comes to sex. "They have no special requirements; they are almost always ready and willing" (Zilbergeld, 1981, p2). And it is believed that men must be good at performing this function [sex]. It would be unmanly, if not being able to perform it well. Therefore, when problem of infertility occurs and treatment begins, it breaks the normal myth of manhood or male sexuality. That is for certain that while many other aspects of a couple's functioning in the context of the problem could be explored, sexuality is affected by infertility even more. The inability to "make a baby" is therefore correlated with a sense of sexual failure (Covington, 1988). In obvious ways there are short-term issues, with sexual spontaneity and romance being reduced as temperature charts and controlled timing (i.e. ovulation detection and frequency control to have adequate sperm count levels) (Platt, 1994), turn sexual activity into a forced event. This is well documented in the following extract:

"I hate to perform at certain times of the month, like an animal, at my wife's request.

Sometimes it's five to seven times a month. I feel loving two or three times a month, but I feel used the rest of the time. The rest of the month, we may have sex, but I'm very turned off, to the point where I don't want to do it. I love my wife very much. She is what is important to me, not a possible child. If and when we have a child, she will still be the most important person in my life. If we don't have any children, I still plan on leading a full life" (Zoldbrod, 1993, p184).

However, long-term sexual difficulties may also happen as physical and psychological demands on the couples increase, and as their efforts to cope and live with the stress and tension of infertility workups continue. Some sexual problems like vaginismus- painful spasms of the muscles of the vagina, or ejaculatory incompetence, may cause infertility (Dubin & Amelar, 1972; Leiblum, 1987), but it is more likely that sexual problems occur due to unsuccessful attempts at procreation, and the reaction to the overall stress of infertility (Mai et al., 1972). In fact, what is commonly reported is that couples who previously had a satisfying relationship now found their lovemaking to be more perfunctory (Menning, 1980). Certain medical test like post coital sonograms or insemination may have a negative affect on sexual performance, and maintain feelings of embarrassment or shame (De Vires, Degani, Eibschitz, Oettinger, Zilberman & Sharf, 1984; Zoldbrod, 1988). Examples of other sexual difficulties these couples may experience are: increasing or decreasing the frequency of sexual relations; transient impotence; performance anxiety; and feelings of intrusion in their bed (i.e. a menage a trios or a man, a woman, and a basal thermometer). In addition, feelings of sexual inadequacy may be another possible long-standing complication for the infertile couples' sexual relationship.

Berger (1980) interviewed sixteen couples aged 21 to 38 years old who were all diagnosed as male infertility. Eleven husbands reported a period of impotency and depression following diagnosis. Fourteen wives felt angry towards their husband, and even wished to get rid of him.

They also experienced psychiatric symptoms and guilt because of their wish against him. Ten couples decided to go ahead with donor insemination. It is suggested that the secrecy commonly resulted from this reproductive option might inhibit the coping patterns of infertile couples as they attempt to resolve their problem. For example, how does feeling “betrayed” by their bodies or that their bodies are “defective” compound or change the marital/sexual relationship?

Freeman et al. (1983) found that infertile women were more likely to report greater levels of sexual satisfaction for themselves while indicating a lower rate for their partners.

Fagan et al. (1986) suggests that the term of sexual dysfunction may “undoubtedly have validity in many cases,but the sexual problems experienced by infertile couples have more to do with their sense of self, of generativity and meaning of life. The psychological reaction to infertility is not mere dissatisfaction; it is dysphoria” (p2).

The findings of some type of sexual dysphoria in infertility has been documented by others in the literature (Moghissi & Wallach, 1983; Morse & Dennerstein, 1985; Freeman et al., 1985; Fagan et al., 1986). Leiblum et al. (1987) cited above, reported that one-fifth of the wives experienced an improvement in the frequency of sexual relations and increased sexual satisfaction, with husbands not reporting equally this degree of improvement. Further, 14% of both husbands and wives felt that the impact of infertility on their sexual relations had diminished the frequency of intercourse.

Menning (1977), and Berk and Shapiro (1984) have stated that sometimes, promiscuous or extramarital activities have become the means to restore sexual feelings for these couples.

2.7 Many facets, lessons learned and Chapter Summary

Technically, infertility is defined as an inability to conceive after 12 months of unprotected sexual intercourse. In fact, this definition is to raise a few problems when producing the statistics of infertility. Because there is no detailed information on population's sexual contraceptive behaviour, it is hard to say that the available statistics are accurate enough to hold on to for accurate interpretation. However, although there is likely to be considerable variation world-wide, the majority of studies agreed on an overall rate of 15%.

The medical aspects of a case include the aetiology of infertility and whether there are female or male infertility factors, or both. However, the treatment for infertility ranges from drug therapy to high-technical methods requiring considerable skill by the providers. Psychogenic infertility, evolved in the last two decades as a factor among a gamut of many others contributing to the inability to conceive, became less acceptable as time went by as a sole, causal component of infertility. But because of the inadequacy of the research method, it is hard to say that the patients have started experiencing the anxiety or depression only since they have found out about their infertility.

Psychological consequences of infertility have been discussed in terms of anxiety and depression evolved from infertility and infertility treatment, as well as its effect on marital and sexual relationship. This is quite a crucial issue since both men and women are affected together by the fertility problem.

Although anxiety and depression have been manifested differently between men and women, but it has been reported by both wives and husbands. Differentiation in way of expressing the feeling between men and women is expected since there are different expectations from both sexes in the society. Men may just try to hide their feeling of depression or anxiety by spending more time at work and try not to talk about their feelings to anyone even to their partner. On

the other hand women could express their feelings much easier and talk about it to others they feel close to. Since each has a different way of showing their feelings, it may be hard for the couple to understand each other when facing the problem of infertility. This could have an impact on their marital as well as sexual relationship. Sexual relationship may deteriorate because of the treatment workups and the programme for timed intercourse. However, the stress resulting from infertility may also have a direct relationship with the individual's expected role in the society. For example, it is expected from a man to become a father in order fulfil his social role. Also, a woman is expected to perform her role as a mother and produce offspring. So it is the society and dominant institutions (such as religion and culture) which form the individuals' behaviour and reaction to any life crisis like infertility.

Such diversity of psychological aspects of infertility immediately brings about yet another new dimension in the arguments put forward in this chapter namely: infertility reactions are very different from what we know and have researched on any other life time crisis or patients with life threatening illnesses. When comparing the crisis of infertility to other life crisis, Tennen et al. (1991) points out that "one way in which impaired fertility differs from other threatening events is that it represents an ambiguous circumstance in which nothing specific has actually occurred" (p127).

Zoldbrod (1993) has a very interesting way to make a distinction between the category of what has been labelled as "infertile patient" and others! Patients suffering from a life threatening illness:

"Medical personnel, in particular, are accustomed to find patients with more serious and life threatening events than infertility behaving like brave little soldiers, being cheerful, co-operative, and happy to be alive. In contrast, infertility patients stay upset. They do not see anything good about their infertility. So they become rejected by others because their

relationship damages with others” (p127).

More importantly in view of the arguments put in this chapter and according to many recent writings it is now clear that scientific efforts must be increasingly geared towards refining our understanding of what typifies the psychological experience of infertility (Adler, 1991; Platt, 1994).

3 Chapter 3: Development of new “miracle” techniques for treatment of infertility and their Psychological consequences

“After all, far from miracle, high-tech treatments for infertility are a little bit of science, a lot of art, and a great deal of luck.”

(Annas, 1995, p41)

3.1 Preface

In 1931 Aldous Huxley predicted that 600 years would pass before we saw the first ‘test-tube’ baby. In 1970 the National Academy of Sciences estimated that it would be around the year 1995 before the theory of test-tube fertilisation was put into practice. In 1971 Steptoe and Edwards successfully fertilised eggs in vitro, and in 1978 Louise Brown, the first “test-tube” baby, was born (Blank, 1979).

The new “miracle” techniques of treatment of infertility soon dominating the scene of medicine brought with them new hope for millions of infertile men and women but for the reasons that will be explained in this chapter introduced new psychological and social complications. The current chapter is organised to cover the following issues:

- To give a brief historical overview of man’s quest for finding reasons for not being able to conceive.
- To give an overview of how the nature of treatments developed has changed throughout the centuries and the extent to which a shift of focus on blaming women only has changed to include men.
- To provide an argument that the miracle of IVF was not an overnight discovery rather aspects of IVF had been the subject of human investigation before its formal introduction to

medical sciences.

- To provide evidence in support and against possible psychological distress that undergoing IVF might entail for those undergoing this treatment.

3.2 Man's quest for fertility: A brief historical overview

First written reference to infertility dates back to the ancient people of Egypt and the writings on the Kahoun papyrus (2200-1950 BC) in which there are detailed accounts for procedures to detect fertility and any therapeutic measures (Shamma & DeCherney, 1995). As noted by Lyons and Petrucelli (1987) the Egyptians had a magical way for testing fertility "A woman would urinate over a mixture of wheat and barley seeds combined with dates and sand. If any grains later sprouted, the woman was sure to give birth. If only wheat grew, the child would be a boy; if only the barley, a girl" (The ancient Egyptian magical means of diagnosing pregnancy, page 101 Medicine - An illustrated History, Lyons & Petrucelli, 1987).

For the first time, in ancient Greece, Hippocrates (460-370 BC) started to discuss infertility and explained mechanical side of conception and pregnancy in which penis actually enters the uterine cavity and the semen of the male mixes with a semen concentrate produced by the female. Then, as early as second century AD a Roman author Soranus, known as the father of gynaecology by some, made some interesting observations reasoning infertility that has significant appeals to modern day medicine. Soranus argued that the reasons could be that the timing of intercourse was improper and the most fertile time of the menstrual cycle was just after the end of menstrual flow. He also believed that hot baths reduced fertility (Burns et al., 1999).

However, with the advent of more scientifically based investigation into infertility and its causes dating back to the 16th century, attention was more focused on anatomical and malfunctions as causes of infertility. Much of this review is taken from Greil (1991) as well as

Burns et al. (1999).

Historically women's reproductive systems have been the focus of attention (see e.g. Blyth, 1990-1991). Vesalius (1514-1564) has described the female reproductive anatomy and Spallanzani described the process of fertilisation. In the 1800s, it was believed that infertility was due to a mechanical problem caused by disorders of the cervix or malposition of the uterus. As a result, the treatment of infertility was mostly surgical involving dilation of the cervix, removal of pelvic adhesions, and surgical repositioning of the uterus (Burns et al., 1999).

According to Burns et al. (1999) observations and insights gained during the 1900s have a solid basis for modern practice in infertility. These observations include the relationship between body temperature and the phases of the menstrual cycle, measuring progesterone in the blood, looking at the histological pattern of the lining of the uterus to determine if ovulation has occurred, or use ultrasound technique to assess follicular activity.

In the 19th century, gynaecologists saw as a legitimate part of their responsibilities caring for infertile patients in particular women being the sole cause of infertility. However, they did not have much to offer. In 1860s, J. Marion Sims, often regarded as the father of modern gynaecology, was reported as constantly "being besieged by unhappy women whose one dominant desire was to have offspring, even at the cost of major operations and all kinds of personal discomfort" (Harris, 1950, p179). A trend that has been observed coming closer to modern time. In 1956, Science Digest reported that physicians were not happy as infertile women, out of desperation to have a baby, were "shopping" from doctor to doctor (Science Digest, 1956). Their desperation was obvious by the actions women took for achieving pregnancy. In the US and England, in the eighteenth century, women used herbal remedies for achieving pregnancy (Fox, 1966). Some practised the advice from William Potts Dewees, who

noted in 1825, eating cooked dog meat could make a sterile woman fertile (Radbill, 1976). Even in the 1940s and 1950s women wrote to the reproductive endocrinologist John Rock volunteering to serve as guinea pigs for any experimental therapy that might offer some hope (Sandelowski, 1989).

From the mid-nineteenth century through the early twentieth century, most cases of female infertility were attributed to displacements of the uterus, which were treated surgically in some cases and manipulated without surgery in others (Tilt, 1881). Some cases of infertility were attributed to cervical stenosis- an abnormal narrowing of the cervix, and were treated sometimes with surgery and sometimes by more conservative means (Griel, 1991).

3.2.1 Male infertility and the New Technological Developments

Women were the centre of attention and observation for cause of infertility until there were some pioneering work due to the invention of the microscope in the 17th century. Van Leeuwenhoek observed sperm by microscope in 17th century (Burns et al., 1999). In the 1860s, Sims, examined male semen under the microscope and discovered dead spermatozoa in a sample of mucus taken from a woman's cervix immediately after intercourse (cf. McGregor, 1986, p124). It has been argued that Sims was the first to have experimented with artificial insemination, based on this discovery, but he had little success with it because he and his contemporaries did not know at which point in the menstrual cycle conception is possible (Marsh & Ronner, 1996). Indeed, there seems to be general agreement in the literature that the first recorded case of artificial insemination by donor (AID) was performed in 1884 (Watters & Sousa-Poza, 1966; Waltzer, 1982; Small & Turskoy, 1985; Blyth, 1990-91; Shapiro, Saphiro & Stone, 1990; Holbrook, 1990). However, the procedure was kept relatively secret because of ethical concerns (Holbrook, 1990). At the same time, in Europe, Paolo Mantegazza recommended using sperm banks for veterinary and human purposes. He recommended that

soldiers going off to war freeze their sperm so they would be able to sire a child if they were incapacitated or killed. However, techniques for freezing and thawing sperm remained relatively inadequate for almost a century (Holbrook, 1990).

Macomber and Sanders in 1929 analysed sperm and described normal sperm count which is similar to the modern approach (Burns et al., 1999). However, it is quite recent that the World Health Organisation has published a manual that standardised the techniques of semen analysis, as well as the normal range of sperm and semen parameters such as sperm density (count), motility, and morphology (WHO, 1992).

3.2.2 Pre-IVF Medical Advances

The development of X-ray techniques and the invention of the Rubin test for tubal potency was another important technological advancement which has given greater powers for diagnosis of female fertility (Burns et al., 1999).

The relationship between ovulation and the menstrual cycle was clearly understood by 1940 and researchers isolated the ovarian hormones oestrogen and progesterone, determined their functions, and synthesised oestrogen in the form of DES- diethylstilbestrol (Gruhn & Kazer, 1989). [DES is a drug which was widely used in order to prevent miscarriage in spite of warnings about it causing serious problems- birth defects in uterus, for DES daughters and sons (Clarke, 1988)]. There was good knowledge about the normal range of sperm and semen parameters and also good understanding about the “perfect” conditions for conception. There was however, not a major medical advances on treatment of infertility until the mid-1960s. Medical literature on infertility in the 1950s shows that doctors still had few concrete therapies for dealing with infertility. Letting nature take her course, was perhaps the most effective treatment for infertility (Simons, 1988). If the cause of infertility was unknown, popular belief was mostly supporting that it must be psychological! Thus giving way to the rise of the

psychogenic model (Ehrenreich & English, 1979) discussed in the previous chapter.

In late 1960s the development and diffusion of the technique of laparoscopy allowed physicians to actually see female reproductive impairments (Gomel, Taylor, Yuzpe, Rioux, 1986). The technology necessary for the industrialisation of infertility was in place by the end of the 1960s (Griel, 1991).

Thus came the era for human reproduction to take its giant step forward at a much faster anticipated rate with the first in vitro fertilisation achieving pregnancy in 1970's. This was largely due to greater medical advances as explained above and also partly due to the increasing "consumer demand" (Greil, 1991) namely: greater number of older age women aiming for conception and men with reportedly growing historical decrease in their sperm count seeing hope for their misfortune (Hurst, Dye, Rutherford & Oodit, 1998). IVF seemed to have a solution for both these cases as well as giving the chance of infertility to many other causes such as blocked fallopian tubes (Greil, 1991).

3.2.3 The Miracle of IVF

IVF, which literally translated means "fertilisation in glass", is the technique whereby fertilisation of the egg by the sperm takes place outside of the woman's body. While In Vitro Fertilisation (IVF) was originally designed to overcome irreversible disorders of the fallopian tubes; it has become an appropriate treatment for virtually all forms of infertility. With the birth of Louise Brown in August, 1978, the world's first test-tube baby in England (Steptoe et al., 1980), an exciting opportunity was seen to have been offered to millions of infertile men and women around the world that a "cure" was indeed in sight. Soon after this event, over 200 clinics around the world engaged in what is known as In Vitro Fertilisation or IVF (Mao & Wood, 1984; Salzer, 1986; Winston, 1991).

However, behind the excitement of IVF there is a problematic agenda. Firstly, IVF is relatively

prolonged and is in different stages. The successful transient of each stage is crucial to its success. In addition to very high costs (Wright et al., 1991; Becker & Nachtigall, 1994) involved with the treatment there is the very low success rate and high failure rate approximately 90% (Interim Licensing Authority, 1990). Thus whilst the hopes of many infertile patients are raised that a “cure” is in sight there remains the agony of failure at this final battle against infertility. The aim of writing this section is therefore to highlight who benefits from IVF, what each stage entails and the success rate of IVF and other related modern techniques. The view is to prepare the scene to look further to what possible psychological consequences undergoing IVF might entail.

3.2.3.1 Clinical Procedures for IVF

The main group of women who will be candidates for IVF are those with damage to the fallopian tubes. In addition, the problems of oligospermia, major cervical mucus hostility factors and certain cases of unexplained infertility may be solved by IVF (Neuberg, 1996). Thus, when the treatment by medicine failed and all the investigations showed that they need further treatment, the couples are given the option to try IVF and other invasive treatments, which suit their condition.

Consultation: The initial consultation will be at the centre with the doctor and it involves taking history, blood tests, urine test, abdominal and internal examination and scan. When diagnosis is made, information will be provided to the couples and their questions will be answered. Then the arrangement will be made for the treatment procedures of IVF.

Ovulation by help of Hormones: The initial purpose of IVF treatment is to suppress the natural ovulation (egg production) and stimulate the ovulation by using hormonal drugs in the form of nasal spray and injection. IVF treatment starts with the woman’s menstrual flow (Day 1) in which she calls the clinic to book an ultrasound scan appointment

following Day 13 of her cycle. On Day 2 she starts taking Nasal Spray five times a day until Day 13- scan day. Following ultrasound scan and provided it is satisfactory, she needs to commence her injections (two in a day) for another 6-7 days before the next ultrasound scan. Meanwhile the dosage of nasal spray is reduced. After the second scan, the dose of injection may need to be adjusted (either increased or decreased) according to the ovarian follicular response. Once the follicles become mature further different hormone injection (Profasi-HCG) needs to be taken and hormonal suppositories will be commenced the day following egg collection.

Egg Collection: The eggs are collected through the top of the vagina using a fine needle under ultrasound guidance. The fluid filled sacs on the ovaries (follicles) in which the eggs develop are punctured and the fluid containing the egg aspirated. The minute eggs, which are suspended in a “cloud” of cells called cumulus cells, are immediately detectable under the microscope by an embryologist. This technique can be conducted under local anaesthesia and light sedation. The woman recovers very quickly from the procedure and is able to go home after a few hours. Sometimes laparoscopy or general anaesthetic may be necessary; so she is advised to come with a companion (either husband or a friend), who can take her home.

Fertilisation: After egg collection the eggs are put into special culture medium and placed in an incubator under similar conditions as the woman’s body, i.e. exactly the same temperature and pH. While the eggs are in the incubator the sperm from the man is specially prepared. This preparation is then added to the eggs in the culture medium and the mixture is returned to the incubator where fertilisation will take place. Approximately 48 hours later resultant embryos will be carefully identified by the embryologist and usually will have divided twice to consist of four cells. It is important to note that as in nature, only the good eggs will fertilise. Up to a maximum of three embryos may then be selected for embryo transfer and any

remaining can be frozen and kept for future use of that patient. Again it is important to note that not all embryos are suitable for freezing or will survive the freezing and thawing process.

Transferring the Embryo(s): To transfer the embryo a special cannula or tube is carefully inserted into the uterus via the vagina and cervix and the embryos transferred into the uterine cavity. If possible, more than one embryo is transferred as not all embryos have the potential of achieving a pregnancy and therefore by transferring more than one embryo, the chance of pregnancy will be increased. Embryo transfer requires attendance at the centre.

Confirming Pregnancy: A week or ten days after the embryos have been transferred, a blood test (β HCG- Human Chorionic Gonadotrophin) is normally performed to detect if a pregnancy has resulted and plans are made for a later review after an ultrasound scan is performed to confirm a viable pregnancy.

3.2.4 Other Techniques

The technique of GIFT differs from IVF in that the eggs, which are collected, are transferred immediately into the fallopian tube with a prepared sample of sperm, but up to the time of egg collection the treatment is identical. Its essential difference from conventional IVF is that fertilisation takes place inside the woman's own Fallopian tubes rather than outside the woman's body as in IVF. For this procedure, at least one Fallopian tube must be patent, healthy and accessible to the surgeon. Eggs are usually collected by laparoscopy, which requires a general anaesthetic. Once all the eggs have been collected, up to three may be transferred into the outer end of one Fallopian tube, along with a preparation of sperm, leaving any excess eggs available for IVF as possible storage of resultant embryos by freezing. Usually the woman is advised to take two days off work after the procedure. Similarly to IVF procedure, a week or ten days after the GIFT procedure has been performed, a blood sample

can be taken to detect (β HCG) whether or not a pregnancy has been established. GIFT may be relatively more successful than IVF because the Fallopian tube is the natural environment for fertilisation which also transports the embryo into the uterus for implantation between five and six days after egg release.

In some circumstances, early embryos (i.e. zygotes-resulting 24 hours after egg collection and insemination) are transferred into the Fallopian tube by a technique called ZIFT which is identical to GIFT except that the early embryos fertilised outside the body are placed into the Fallopian tube, rather than the egg/sperm mixture as with GIFT.

The simplest method of assisted reproductive technology is intrauterine insemination (IUI) which takes place after induction of ovulation. A sample of the male partner's fresh or frozen semen is then prepared and then gently introduced into the uterus via the cervix through a very fine tube. One of the newest techniques, Intracytoplasmic Sperm Injection (ICSI) involves injection of a single sperm directly into the ovum, hoping fertilisation will occur. This procedure is mostly used for male infertility. Of course the female partner must undergo ovulation induction and egg collection in order to have her eggs available for microinjection. The success rate differs for each technique. It has even been reported that the success rate of human in-vitro fertilisation IVF remains low, with only approximately 10% of embryos transferred resulting in term pregnancy (Lane & Gardner, 1996). However, some programmes have recently reported success rates of 30-40% or even higher per attempts (Burns et al., 1999). Success rate for IUI varies from 10% (Begley, 1995) to 45% where there is abnormal cervical mucus production (Davajan & Israel, 1991).

Table 3.2.1 A summary of success rate of infertility treatment techniques in the US (Begley, 1995) and in the UK (Neuberg, 1996)

| Success rate % | IVF | ZIFT | GIFT | IUI | ICSI |
|----------------|-------|-----------------------------|------|-----|------|
| USA | 18.6 | 24 | 28 | 10 | 24 |
| UK | 10-25 | Higher than IVF and GIFT | 25 | 10 | 5-10 |

3.2.5 Section Summary and Conclusion

Man’s quest for understanding fertility dates back to the ancient world of Egyptians, Greeks and Romans. Whilst there was little of scientific investigations in those days there were remarkable similarities in what ancient people regarded as “cause” of infertility and those of modern medicine. Such factors as “body temperature” and correct timing has been in the minds of ancient Romans and is the focal position of modern medicine. The speed with which physicians have incorporated genetic technology into practice has caused quick and fundamental social changes. Indeed the rapid medical advances in the treatment of infertility left little time for parallel scientific psychological research into psychological consequences that these new technologies might add to the already stressed infertile patients. This is especially true when there are reports that indicate that high-tech treatments have overall failure rates of approximately 90% (Interim Licensing Authority, 1990).

Today’s fertility treatments fail more often than they succeed, but assisted reproduction is still a young science, and researchers insist it is a helpful one. The fact that scientists are devising new techniques does not mean patients will benefit. Exciting innovations often prove worthless or harmful in the long run. But if several emerging technologies fulfil their promise, they could help couples conquer such problems as advanced age, poor sperm quality and the body’s rejection of healthy embryos.

3.3 Psychological and social consequences of IVF

“.....of the 83 women on the IVF waiting list, 94% agreed with the statement ‘I feel I must try IVF; at least then I can be sure I have done everything possible’, and 96% also agreed with the statement ‘Even if IVF fails, I will be glad I tried it.’”

(De Zoeten, Tymstra and Alberda., 1987, cited in Golombok, 1992, p210)

3.3.1 Preface

Whilst IVF seemed to have brought new hope to many infertile patients, for reasons that will be discussed in this chapter, it may itself have added new problems to the psychological and social problems of infertile men and women which were reviewed in the previous chapter. Thus from a research point of view it is crucial to any investigation in psychology of infertility to examine the extent of psychological and social reactions as a direct result of undergoing IVF treatment. The general structure of the chapter is as follows:

In view of the prolonged nature of IVF treatment involving many different medications and stages (see previous section 3.2.3.1) the following distinct aspects of the treatment may be contributing to the psychological reactions of the patients:

Firstly, any physical and procedural aspects of the treatment. For example, concerns about the actual physical pain, fear of treatment (Baluch et al., 1992a) or concerns about the drugs used and their side effects (e.g. Valentine, 1986; Butler & Koraleski, 1990; Corson, 1993; Reynolds, 1993; Darder, 1993; Franceschi, La Vecchia, Negri, Guarneri, Montella, Conti & Parazzini, 1994). Indeed, women have reported that administration of fertility drugs produces unwelcome side effects, whilst the regimen imposed on sexual relationships during fertility investigation and treatment may actually be counterproductive (Klein, 1989).

Secondly, the possible psychological reactions during treatment, such as fear of failure (Reading, 1991), changes in sexual behaviour (Morse & Dennerstein, 1985; Klein, 1989) and

after undergoing an unsuccessful cycle(s) of IVF (Dennerstein & Morse, 1985). As reviewed earlier being infertile according to most research, is a traumatic event both psychologically and socially thus if IVF is indeed stressful it may add greater psychological pressure to the already heightened infertile patient.

More importantly a penultimate issue is whether the nature and severity of any psychological reactions (if any) may have an impact on the outcomes of the treatment (e.g. Domar et al., 1990; Domar, Broome, Zuttermeister, Seibel & Friedman, 1992). If a contributing factor to lack of conception is stress related, and if undergoing IVF is stress provoking, it would be most important for medical professionals to find out the reasons why IVF may be stressful, and find ways to minimise its stressful impact. The solution to this issue may also have a bearing on the psychogenic hypothesis (e.g. Templeton & Penney, 1982) discussed in chapter 2.

There has, however, been a relatively small number of studies that have aimed to examine psychological aspects specifically aimed at undergoing IVF treatment. Many of these do not offer a conclusive solution to the question at hand because of many methodological problems that will be taken up in the next chapter. Most importantly, none have directly examined the couples' reaction to infertility treatment involving IVF from patients from different cultural backgrounds. This is particularly important as cultures may differ on such variables as their degree of trust in medical sciences, their divine attribution and religious beliefs (Schenker, 1992; Inhorn, 1996). Thus, as will be explained in chapter 5, there is a need for research on different cultural groups to examine possible differences in their psychological reactions to IVF treatment.

3.3.2 IVF and concerns about procedural and physical side effects

In a pioneering study Baluch et al. (1992a) examined whether psychological stress is greater in relation to concerns about the actual physical pain or concern about the possible

outcome. In their study Baluch et al. (1992a) administered questions such as “are you more anxious about being examined internally (procedural) or about what the diagnosis might be (outcome)?”, “are you more anxious about the pain and side effects of nasal spray, daily injections of hormones (procedural) or the effect they may have on the number and quality of the follicles (outcome)?” The results showed that in almost all cases there was greater concern about the outcome rather than any physical damage or pain that these patients may endure. However, such a finding only highlights the severity of psychological stress of infertile patients and their desperation for a solution through IVF. Indeed there is a feeling of surrender to whatever physical damage or pain it may entail so long as they achieve conception (Baluch et al., 1992a). Whilst the series of studies by Baluch and colleagues were more focused on Iranian women seeking infertility treatment in London, interesting observations have been made and suggest that Western women are at times concerned about physical and procedural aspects of IVF. In a study by Imeson and McMurray (1996) on the couples going through IVF it was reported that couples felt lack of information, the quality of support, and the way they were treated had an effect on them and could have been avoided if there was more understanding of their psychological needs. As one patient said: “I was really frightened because I did not know what any of those invasive procedures were. They wouldn’t explain procedures. I’ve found that to be a recurring problem all the way through. They didn’t want to tell me anything. I actually wanted to know what my levels (hormone levels) were. It was like pat, pat, pat, on the head. We’ll organise this!” (Imeson & McMurray, 1996, p1018).

The fact that perhaps physical aspects of the treatment may be of concern to Western patients has also been repeatedly demonstrated by other researchers (e.g. Valentine, 1986; Butler & Koraleski, 1990; Corson, 1993). In particular it has been reported that one of the most worrying effects of treatment is the fear of long-term effects from the drugs involved.

Although infertility by itself is not a life-threatening disease, surgical procedures and massive doses of medication are not totally medically benign procedures. There are too much drugs for a non-life threatening “disease” (Platt, 1994). In fact women take the drugs and bear most of the burden from reproductive technologies and consequently fear the unknown long-term effects. Women have reported that taking fertility drugs produces unwelcome side effects (Klein, 1989). It has been reported fertility drugs may cause ovarian cancer (Reynolds, 1993; Darder, 1993; Franceschi et al., 1994) and if this is found to be true would knowledge of such possible fatal side effect deteriorate the numbers seeking treatment? (McDonald, 1992).

The Western research, however, does indicate that as time goes by patients do make an effort to understand the meanings of medical jargons such as IUI, ART, IVF, GIFT, ZIFT, and which of these are most suitable to their needs and of course the associated complications associated with each treatment. In other words, becoming a “smart medical consumer” is mandatory (Pines, 1990; Becker & Nachtigall, 1991).

Patients often show anger and frustration when information about their treatment is not readily available to them or those staff are seen not to be sympathetic to their emotional needs at each stage of the treatment. For example, in a study by Pengelly et al. (1995) it was revealed that male partners of infertile couples were more angry with doctors and treatment centres. One of the complaints was that some of the men felt humiliated by having to queue to masturbate in the centres only male toilet. However, they always added that their partner’s ordeals were much worse.

Becker and Nachtigall (1991), reported that most often women and men changed physicians (doctor shopping) because they believed they had found a physician (or a centre) who would not be emotionally distant from their problem. Furthermore, the medical anxiety has been shown to have an impact on the patients’ decision over type of infertility treatment she would

receive (Van Balen & Verdurmen, 1999). She may even reject all the infertility treatment available for her because of the anxiety due to the treatment procedure and go for alternatives like adoption, herbal remedies, special diet and so on (Van Balen, Verdurmen & Ketting, 1997; Van Balen & Verdurmen, 1999).

However, in a study by Busch (1997) it was shown that participants praised their physicians and nurses for their expertise and knowledge but they also revealed that they had minimal contact with their primary physicians. The women perceived the role of nurses as counsellor and educator and they felt that the nurses did not play out these roles in the infertility care. Reading (1991) argues that in a way the intensive nature of infertility treatment can lead to a close relationship between staff and patient. In fact this affords an opportunity for staff to deal with psychological issues as they arise, either through direct intervention or appropriate referral.

In conclusion there is evidence that whilst patients may be more concerned about the outcome of IVF treatment, this does not minimise their concern about any possible physical damage they might endure as a result of intake of drugs and surgery. Moreover, lack of knowledge and understanding of emotional aspects of each stage of treatment (on the side of medical staff) and the medical information (on the side of patients) may aggravate the psychological reactions of the treatment.

3.3.3 Psychological consequences during IVF treatment

3.3.3.1 Gender differences

One of the main factors that have been investigated is whether men and women may psychologically exhibit different reactions during IVF treatment. In a study by Beutel, Kupfer, Kirchmeyer, Kehde, Kohn, Schroeder-Printzen, Gips, Herrero and Weidner (1999), 281 couples, undergoing infertility treatment were assessed on treatment-related distress and

depression. The results showed that treatment-related distress was generally higher for women than for men.

Beaurepaire, Jones, Thiering, Sounders and Tennant (1994) targeted a cross-sectional sample of 330 couples (113 were first time participants prior to commence IVF/ET treatment, and 217 were repeat cycle couples). Gender differences in psychosocial adjustment to infertility and its treatment were examined. 30% of both husbands and wives had clinically elevated anxiety level regardless of stage of treatment, and 25% of women (repeat cycle) were at risk of developing clinically severe depressive symptoms. Beaurepaire et al. (1994) concluded that in general IVF procedures are very stressful and couples are increasingly reliant on each other for both emotional and physical support during this stressful period. It was shown that men and women are different in how they cope, and also there are differences in psychological states, dependent on the stage of IVF treatment.

Collins et al. (1992) however, using a self-report questionnaire found no main effect for gender regarding perceptions of their stress on a sample of 200 couples entering an IVF programme. The effect of gender did not reveal any statistically significant differences. On the Infertility Reaction Scale women did seem to have experienced greater emotional and social distress from their infertility and their infertility treatment and they experienced greater pressure from others to have a child, they also expected to receive more social support than the men in coping with their infertility. Nevertheless, the intense desire for having a baby was a main factor for both men and women, increasing their stress in the IVF process.

In an interesting observation by Nachtigall et al. (1992) 36 couples were evaluated via structured interviews with main outcome measures of stigma, perception of loss, role failure, and lowered self-esteem. Among women, cause of infertility did not change the emotional responses. That is, all women among couples reported feelings of stigma, perceptions of loss,

role failure, and loss of self-esteem regardless of where or whether the infertility factor was located. For men, the results were contingent upon a diagnosis. Men with an infertility factor reported similarly to the women, whereas males without an infertility factor did not report negative emotional responses. All women, with or without an infertility factor, labelled themselves negatively using such terms as “barren”, “deformed”, “defective”, and “empty”. Interestingly however, only males with an infertility factor experienced perceptions of stigma and described themselves as “dud”, “loser”, or “eunuch”.

This finding is interesting as it may explain why females are generally found to be more stressed than men. Women may blame themselves more for the infertility problem (McEwan et al., 1987; Van Balen et al., 1989) and they may also be under more social pressure (Callan & Hennessey, 1988; Collins et al., 1992; Nachtigall et al., 1992). Moreover, they are the ones who take the major burden of the treatment, whilst all men do, in terms of physical involvement, is to produce sperm. Women have to inject themselves, use the nasal spray, and undergo the egg collection and embryo transfer. Thus from an emotional and psychological viewpoint the IVF loss may be seen as the woman’s loss. In fact this loss may have to be faced two or more times; first when pregnancy does not occur following regular unprotected intercourse and then a number of times more depending on the number of failed treatment cycles (Monach, 1993). When faced with the painful reality that they cannot conceive, women feel devastated, especially if their biological time clock is running out.

In a study by Laffont and Edelmann (1994), gender differences in the impact of IVF, stressful aspects of treatment and reaction to a failed IVF attempt were measured in 117 women and 101 men. All participants had been through at least one IVF attempt. Women filled in the questionnaire during hormone stimulation at home independent from their partners. Men filled in the questionnaire prior to sperm collection. Both men and women rated waiting for the

pregnancy result as most stressful period and women significantly more than men. Women found IVF more disruptive to their work and leisure activity than for men. Also travelling involved in treatment was more stressful for women than for men. Authors explained that observed gender differences (women being more stressed than men) are due to women's greater personal involvement in IVF. However, since, there is support about the fact that drugs stimulating ovulation have a negative affect on mood (Gassbeek & Leerentveld, 1993) and these women in Laffont and Edelmann's (1994) study, were assessed during hormone stimulation, it is hard to know if their negative reactions were due to the drugs or to the stress of IVF treatment.

From what is discussed above, it may follow that if the women are the main focus of IVF treatment, so it is natural to expect the women to have a higher distress level than the men. But the negative impact of IVF treatment and its procedures on men should not be underestimated (Beaurepaire et al., 1994). For example, men may feel anxiety and be distressed during the time they have to produce semen in the clinic/hospital (Beaurepaire et al., 1994). Furthermore, when O'Moore, O'Moore, Harrison, Murphy and Carruthers (1983) examined semen quality of 500 IVF male patients throughout their treatment cycle, found that their quality of semen reduces significantly during treatment cycle. Possibility as an indication of increased psychological distress in men is further reported by Mahlstedt (1985).

3.3.3.2 IVF affecting Marital and Sexual satisfaction

One of the salient aspects of infertility treatment, in particular the IVF, is that diagnostic procedures and treatments for infertility are generally invasive, technically complicated, and difficult for even an educated lay person to understand. Details of a couple's sexual relationship are recorded and prescriptions for changes in the frequency and timing of intercourse are common (Campbell, Dunkel-Schetter & Peplau, 1991). Such procedures can

threaten the couples' sense of control over their sexual relationship and the privacy it is usually accorded (Matthews & Matthews, 1986). Indeed as one maintained doctors who administer the treatment have the say in giving or refusing permission for intercourse. The bed is now filled with people; the doctor, psychologist, sonographer and many others monitoring the intercourse thus becoming vital figures in the intimate aspects of the couple's lives (De Vires et al., 1984; Zoldbrod, 1988; Becker, 1994). Perhaps one may also add the analyst to the list of people observing the intercourse (Pines, 1990; Becker & Nachtigall, 1991). Thus the emotional life of a couple who already feel diminished in their sense of maturity becomes even more complicated by the conscious or unconscious regressive transference to the life-giving doctor, and to the analyst, as if they were the powerful parents of the past (Pines, 1990; Becker & Nachtigall, 1991).

Freeman et al. (1985) reported that two-thirds of the 200 in-vitro fertilisation patients' evaluation indicated that sex had become less pleasurable, with only the remaining one-third finding it more pleasurable. In a study by Morse and Dennerstein (1985) it was reported that 71% of their sample indicated a decrease in sexual pleasure. Fagan et al. (1986) administered a psychosexual evaluation to 45 couples undergoing in-vitro fertilisation and found that 7 (15.5%) couples had a sexual dysfunction, and 19 (21%) individuals were either suffering from a sexual dysfunction or psychological disorder. Link and Darling (1986) were interested in investigating specific responses of 43 couples undergoing treatment for infertility, with a particular emphasis on their levels of satisfaction in marital, sexual, and other life domains. There were no significant degrees of discord in levels of marital satisfaction. However, in general, wives expressed less contentment on all dimensions than their husbands. In addition, the 17 wives whose husbands did not return the surveys indicated even higher levels of dissatisfaction in all area.

In spite of what has been said above there are studies reporting the positive effects of infertility treatment on the patients. For example, the couples have felt more close to each other when undergoing infertility treatment, mainly IVF. They have reported even a stable marital and sexual relationship. Some have called the experience of infertility treatment as a relieving factor, making it easier for them to come to terms with the reality of childlessness (De Zoeten et al., 1987). Daniluk, Leader and Taylor (1987) studied 43 infertile couples who were undergoing medical investigation. The couples were assessed at 3 stages: initial medical visit, four weeks later during medical testing, and one week after diagnosis. Sexual and marital satisfaction remained stable throughout the investigation and even general quality of the couples' relationships improved as the medical investigation progressed. Similarly, Raval, Slade, Buck and Lieberman (1987) examined marital and sexual difficulties in patients beginning infertility treatment, using a standardised questionnaire and found no evidence to suggest that the couples were experiencing significant marital and sexual difficulties.

3.3.3.3 Is a particular stage of IVF more stressful?

As noted in section 3.2.3.1, IVF treatment entails many distinctive stages and a number of treatment cycles, each with its own specific potential physical and psychological impact. Thus for a research to give a complete picture of psychological reactions to IVF treatment it is important to specify the impact of each stage and treatment cycle. In a very recent study by Slade et al. (1997) emotional and relationship assessments were completed by 144 couples at intake for in vitro fertilisation-IVF and six months after either the identification of pregnancy or the discontinuation of treatment following three unsuccessful cycles. Women also completed emotional assessments at the time of pre-oocyte recovery and post embryo replacement within each treatment cycle. At intake, women were more anxious than their partners and comparative norms, and were less positive than men about their marital and

sexual relationships. Within treatment cycles score for women were higher after embryo replacement and the failure of pregnancy. First and last treatment cycles were associated with greater anxiety.

In contrast, in some other studies like Connolly et al. (1992), it was reported that as time goes by the level and intensity of negative feelings does not increase. Connolly et al. (1992) assessed 130 couples with primary infertility at their initial visit to an infertility clinic. Out of 130 couples, 116 were assessed on a second occasion some 7-9 months later. By that time, in most cases the medical tests were complete. Both partners were assessed on their personality characteristics, psychopathology, perceived social support, sex role identity and marital satisfaction. No major psychological and marital malfunction was reported. The results showed that depression score remained low throughout the period of investigation and there was little evidence of psychopathology in the sample. The level of anxiety and psychiatric morbidity declined between the first and second assessment, but it increased with men who were diagnosed infertile.

Cook, Parson, Mason and Golombok's (1989) study on infertile couples undergoing infertility treatment, showed that both men and women have high levels of anxiety compared with the general population as measured by the State-Trait Anxiety Inventory at initial stages of treatment. Although anxiety was high, depression was not to be a problem for couples embarking upon infertility treatment. Using Beck Depression Inventory for both men and women showed that depression levels did not differ from general population 'norms'. Investigation on marital and sexual difficulties, during treatment, also revealed that there was no evidence to suggest that the couples were experiencing significant marital and sexual difficulties. In short it is interesting to note that most research suggests that stress goes up during IVF whilst depression stays as "normal".

3.3.3.4 Locus of control and infertility treatment

Imeson and McMurray (1996) studied the couples' experience of infertility based on a phenomenological method and reported that couples felt disempowered by health professionals involved in their infertility treatment. Feelings that were magnified by the fact that they were imposed by the very system they are supposed to help them. A patient made a comment:

“Right from the start, I felt we had lost control over what is supposed to be a natural event” (Imeson & McMurray, 1996, p1017). In general, their comments regarding health care professionals involved with their infertility treatment were almost exclusively negative. The patients recalled their experience as being frightened as they were not explained to and informed about the procedures and the methods of the treatment. Even the results of the investigations like blood tests for hormones' level were not explained to them as if they should have known it. Basically they felt that the staff expected them to keep quiet and just get on with it! The patients felt that they have no control whatsoever over their treatment and over their body! (Imeson & McMurray, 1996).

This sense of losing control over one's life is also documented in more quantitative analysis. Platt et al. (1973) used Rotter's (1966) questionnaire for infertile patients and found that infertile people were more likely to perceive themselves as controlled by external forces. Loss of control was viewed as aversive and likely to lead to depression and other negative effects (Wortman, 1976).

The experience of infertility inherently involves such a loss of control, since all infertile individuals find themselves in a situation where they are unable to conceive. Based on control research in this tradition, one would expect infertile couples to experience considerable distress (Stanton & Dunkel-Schetter, 1991).

Within the realm of psychological research the most relevant theoretical explanation of

patients' reaction to loss of control may be explained in terms of the Attribution Theory proposed by Taylor, Lichtman and Wood (1984). This theory is concerned with how people interpret the causes of social events. Although causal attributions can be made by most people for most events, people are most likely to ask "why" questions when something unexpected, unusual, or unpleasant happens (Sears, Peplau & Taylor, 1991). The Theory argues that people differ in the expectations they hold about the sources of good and bad things that happen to them. Internals credit themselves with the ability to control the occurrence of reinforcing events, both positive and negative. Other people, termed externals, perceive reinforcing events as under the control of luck, chance, or powerful others-factors external to themselves. As applied to infertility by Lazarus and Folkman (1984) this raises two important questions. Do individuals who believe they generally have much control over their lives react differently to infertility than individuals who believe they have little control? Do IVF patients who have a long history of infertility come to believe that they have little personal control over their lives in general? (for a review see Stanton & Dunkel-Schetter, 1991).

3.4 Psychological consequences post-IVF treatment

At least 70% of people attending fertility clinics would feel they are failures, not only for having infertility problems, but also for not succeeding with treatment; they may also feel they failed the clinic and the doctor, as well as themselves their partners and families (Jennings, 1992). Indeed to many this is the last chance and for most of the women they must acknowledge that they are now sealed as permanently infertile (Dennerstein & Morse, 1985). Whilst the most noticeable psychological factor during IVF treatment has been the changes in anxiety levels of patients the most salient aspect of post IVF era is the greatest level of depression, desperation and emotional drainage. The words desperation, drainage or depression or some such synonym appear so frequently in conjunction with infertility that

sometimes it appears that what troubles infertile women and men is not the absence of a child as such but some form of emotional disorder related to their failure. "Desperation combined with infertility appears to produce a particularly potent mix; one that forces fecund women to lease their womb, sends infertile men and women scouring the world for orphans to adopt and incites some doctors into developing new techniques that subject people to many indignities" (Pfeffer, 1987).

Greenfeld, Diamond and Decherney (1988) studied 97 failed IVF patients and concluded that these women experienced a grief reaction which may be quite disruptive to their lives and which is similar to that experienced by women suffering a pregnancy loss.

In a study of 86 unsuccessful IVF patients, less than a year on average after the last failed IVF cycle, Baram, Tourtelot, Muechler and Huang (1988) found that 66% of the women and 40% of the men reported depression following IVF failure. As in the study by Leiblum, Kemmann and Lane (1987) the severity of depression was greater for women than for men. In both Greenfeld et al.'s (1988) and Baram et al.'s (1988) study, the psychological problems resulting from failed IVF decreased during the months following treatment. However, a substantial minority experienced intense and prolonged symptoms of depression including feelings of guilt, sleep and appetite disturbance, feelings of helplessness, hostility and thoughts about suicide. Also in the study by Baram et al. (1988) one-third of respondents were still depressed 18 months after their failed IVF attempt.

In a more recent attempt to understand better the emotional effects of infertility, Seibel, Bernstein, Levin and Seibel (1991) reviewed 300 patients' responses from infertile couples in Fertility and Sterility Abstract. They found that the primary reason for wanting to discontinue medical intervention for infertility was emotional drain (72%). Unsuccessful attempts, pain and life disruptions were the other cited reasons for wanting to stop.

Nevertheless not all aspects of IVF are seen depressing. There are studies reporting that some IVF procedure helps them to come to terms with their childlessness. Baluch et al. (1993) reported that Iranian women felt more satisfaction that they have tried IVF even though it had been costly and unsuccessful. For Western population a similar pattern has emerged. Leiblum et al. (1987) found that 40% of the sample reported satisfaction at having attempted all of the available reproductive alternatives. Similarly, Baram et al. (1988) found that 26% of patients felt that they had done their best to conceive and could “close the book” on infertility, either to pursue other options such as adoption or to abandon the idea of having children. A study by De Zoeten et al. (1987) suggests that couples embark upon IVF with the view that even if the procedure fails, they will benefit from the process of treatment. Of the 83 women on the IVF waiting list, 94% agreed with the statement “I feel I must try IVF; at least then I can be sure I have done everything possible”, and 96% also agreed with the statement “Even if IVF fails, I will be glad I tried it.”

3.5 IVF and the Psychogenic hypothesis

As mentioned previously in previous chapter, section 2.3.2, in a small number of infertile couples no diagnosis can be made until after a complete investigation and thus this category of patients are referred to as the “unknown”. At times the unknown has been attributed to being due to psychological factors- hence supporting the psychogenic theory/hypothesis.

More practically the unique features of IVF have provided a testing ground for the psychogenic hypothesis. Questions such as “Is there evidence of changes in semen analysis as a result of (stressful?) aspects of the treatment?” or “Is there a difference in success rate of those men and women scoring lower on psychological assessment measures such as state-trait anxiety and those who do not succeed?”

Some researchers have directly examined the latter relationship i.e. psychological aspects of infertility and its relationship to conception during the IVF treatment (e.g. Boivin & Takefman, 1995). Boivin and Takefman (1995) reported that women who did not become pregnant with IVF reported experiencing more stress during treatment than those who became pregnant (see also, Vartiainen, Suonio, Halonen & Rimon, 1994; Meyer, Strauss, Lesoine, Brandenburg & Mettler, 1996 for relevant research indicating similar associations between pregnancy and psychological distress).

The report by O'Moore et al. (1983) on men's semen quality is of great significance which is evidence of the impact of infertility treatment (IVF) on men and their physical reaction. As mentioned before, this was further reported by Mahlstedt (1985).

Harlow, Fahy, Talbot, Wardle and Hull (1996) examined changes in biochemical and questionnaire-based assessments of stress in infertile women in order to investigate the link between infertility and stress as cause or consequence factor. Median baseline, follicular phase and pre-operative serum prolactin cortisol and state anxiety score respectively all increased during stimulated in-vitro fertilisation treatment. There was no such increase in a control group having similar laparoscopic surgery unrelated to infertility, or in women having unstimulated IVF without laparoscopy, suggesting that anxiety levels are greatest in stimulated IVF, increase as a result of the treatment, and are adequately reflected by state anxiety scores. Baseline serum prolactin in unstimulated IVF was significantly higher than control, although this was not reflected in serum cortisol or state anxiety score. Trait anxiety was constant within and between groups, suggesting that stress is not contributing greatly to the infertility. Women who achieved a pregnancy had similar state anxiety scores to those who failed; suggesting that the degree of anxiety observed during IVF treatment is unlikely to influence the chance of pregnancy. However, Harlow et al. (1996) reported that there was a trend

towards lower trait anxiety in women who became pregnant, but the numbers were small. Finally it was concluded by Harlow et al. (1996) that there has been no evidence to show the relationship between stress and IVF outcome, suggesting that stress is not contributing greatly to the infertility, and also the degree of anxiety observed during IVF treatment is unlikely to influence the chance of pregnancy.

3.6 Chapter Summary and Conclusion

It was reported how the history and usage of infertility treatment has been in line with the needs and desperation of the infertile patients. Although it was originally predicted that it will take quite a while before the first test tube baby was born, it did not take very long when Louis Brown- first “test-tube” baby was born in 1978. Whilst the recent IVF (and other related techniques) did produce the miracle of enabling women to achieve pregnancy, which would have been impossible under previous treatment regimes, yet they are all costly, prolonged and with a very low success rate, and indeed may add to the psychological stress of couples.

Because there has been very rapid improvement/advancement in the art of infertility treatment, the emotional and psychological needs of the couples using this technology have not been appropriately explored. It has been demonstrated that the effect of the treatment, in particular IVF and other advanced technology involved in treatment of infertility may result in the negative psychological reaction already noted in infertility patients. In fact, the patients who go through the treatment experience a significant amount of stress, anxiety, depression, swing mood, anger, instability in marital and sexual satisfaction, isolation, uncertainty and loss of control over their body. However, in spite of all these negative effects, they still pursue the treatment and continue treatment if failed first time. Therefore, there is intensive demand on exploring the couples’ emotional and psychological needs when facing infertility and infertility treatment. For example, one main area that needs to be explored, is their marital and sexual relationship when they are going through infertility treatment. It has been revealed that the techniques of the treatment and involvement of the health professionals have a direct affect on the couples’ sexual relationship. However, the couples may not be very aware of negative affects of the treatment on their marital and sexual relationship when deeply engaged with treatment procedures. Therefore, their personal attitude could be observed by the health

professionals involved in the treatment and helping them with appropriate techniques e.g. counselling, giving appropriate answers to their questions regarding the techniques involved in the treatment, effective listening, and also tailoring the treatment procedures to the couples' emotional needs. During infertility treatment, the couples may feel that they have no control over their body function and when decisions are made for them without their direct consultation. This should be targeted by the professional team who are involved in the treatment and taking appropriate steps in involving the couples in their treatment decisions and giving them the chance to discuss and regain the feeling of control.

Finally, it has been shown in some studies that there is a possible link between stress levels and conception, this patients' stress could be minimised to enhance conception by using appropriate techniques and methods which are useful in resolving stress and anxiety, e.g. group discussion. As a result, it has been recommended that all clinics should provide counselling facilities to the patients, and that the staff (doctors, nurses) develop effective skill in order to identify those patients who are more vulnerable to stressful aspects of this treatment.

4 Chapter 4: A critical review of methodological weaknesses of the research on Psychological and Social Aspects of infertility

“..... one has to bear in mind that, in order to draw any reliable conclusion, one cannot limit oneself to retrospective studies only. If one wants to make any firm statements about which variables play an important role in reproductive technologies, one has to study couples prospectively. Even then it will be difficult to separate reactions from undergoing an infertility treatment to reactions which result from experiencing infertility per se, because they are intertwined in such a complex way. Most importantly is that more knowledge enables us to help couples experiencing the rather stressful infertility treatments to resolve their fertility problems.”

(Eugster & Vingerhoets, 1999, p587)

4.1 Preface

In this chapter a critical review is made of research on the psychological and social factors in relation to infertility and infertility treatment with a view to highlighting where weaknesses arise and providing a methodological framework for current and future research. According to Greil (1997) there was a shortage of studies on social and emotional aspects of infertility up to about ten years ago. But this is no longer the case because there have been a significant number of studies since then. Greil has identified at least 94 quantitative and 26 qualitative articles on this theme, which have been published since 1986. This period incidentally is after the sudden advancements of new techniques of infertility treatment, in particular the IVF. Most of the literature pertaining to the pre-IVF era was critically reviewed in chapter two. The literature reviewed here is mainly those conducted more recently i.e. after the excitement of IVF.

4.2 The Pre-IVF Literature

As argued in chapter 2 the early literature dating back to 1935 was subject to several reviews, in particular an extensive one by Noyes and Chapnick (1964). The general consensus was that of the 75 or so studies conducted only one paper clearly stated a null hypothesis. A few articles contained no recognisable hypotheses, only a discussion of the pros and cons. Several authors arrived at the hypothesis that because major psychic disturbances are known to cause amenorrhea and impotence; psychic involvement must also cause infertility, though the mechanisms remain unknown. It was found that materials and methods were rarely well presented in these papers and they mainly studied case histories, objective testing with standardised tests were rare, and the use of controls rarer still. The two readers were confused by the wide variety of statements made and by the evidence used in support of what appeared to be conclusions. Finally the result of the review on the whole showed that the evidence presented in the studied papers was scanty, poorly organised, and poorly analysed.

Later Pantesco (1986) critically reviewed the studies on psychological aspects of infertility from 1942 to 1983. The findings showed that most of the studies have centred on women only and those studies ostensibly involving men substantially pointed to women or the social system as the basis of the problem. In addition, according to Pantesco (1986) all the studies on this issue were lacking in depth, and systematic and substantiated methodology that is of significance when studying psychological aspects of the patients experiencing infertility.

Subsequently, in view of little scientific interest in pre-IVF literature in the following sections much of what is reported as examples of “poorly” conducted research relates mostly to criticism of studies conducted post-IVF research.

4.3 Is there a Theory?

In a scientific field the importance of having a valid theory is well established and it is very significant to utilise a suitable and practical “theory” to the problem of infertility. Dunkel-Schetter and Stanton (1991) have emphasised that the “theory” is to help to develop a “hypothesis” and consequently when there is no “theory” it is difficult to formulate a clear hypothesis.

Dunkel-Schetter and Stanton (1991) also emphasised on the fact that a problem which exists in most of the past research on psychological aspects of physical illness and medical treatment in general is that it has been atheoretical, particularly, infertility research (Matthews & Matthews, 1986; Greil, 1997). Most of the studies reported are exploratory in nature, or as argued by Greil (1997), only some qualitative work which has utilised a small number of psychological theories to problems of infertility, has provided a clear focus for the author.

In spite of not having a theory purely related to psychological aspects of infertility it was outlined previously that by using existing theories from psychology to formulate hypotheses and to design studies to test them would expand the horizons of infertility research and offer more grounded approaches to understanding the psychological effects of infertility.

In previous chapters the psychological theories adopted and utilised in relation to issues of infertility and infertility treatment were discussed. In this section they are briefly outlined with reminders of why they have failed or seen to be inadequate to explain a psychological and social aspects of infertility and infertility treatment.

- The Socio-biological Theory

The theory of socio-biology maintains that humans have evolved in ways that maximise the likelihood of their individual genes being passed on to offspring and thus “surviving” in

future generations (Symons, 1979). As a result, every individual naturally has a drive to copulate and reproduce and, indeed, this is to maintain his/her new generation.

However, very soon it was noticed that the theory fails in relation to psychological behaviour of infertile patients. For example, the theory of socio-biology tested in relation to preserving genes were soon nullified when people were eager to adopt a child (Tylor, Bonapart & Grant, 1960; Aaronson & Glienke, 1963; Rock, Tietze & McLaughlin, 1965; Seibel & Taymore, 1982; Edelman & Connolly, 1986), or when they went for donor insemination in which there is lack of genetic link (Edelman et al., 1994).

- The Stage Theory

According to Kubler-Ross (1969)- Stage theory driven from Crisis theory, at times of life event crisis (i.e. dying), the individual passes through different stages of emotions: denial, anger, grief, and finally, acceptance. Stanton and Dunkel-Schetter (1991) have argued that this theory is the most related/relevant theory to infertility in which a set sequences of emotional reactions and a final stage of resolution one viewed as adaptive takes place. In fact, principle investigations on stages of response to major losses have indicated that stage theories are not well substantiated empirically, and therefore models of individual variation in emotional response seem more appropriate (Silver & Wortman, 1980; Wortman & Silver, 1987).

In chapter 3, the relation of the stage theory with the experience of infertility and infertility treatment were discussed. However, the studies which have utilised this theory to the study of infertility is limited and it is premature to draw a general conclusion based on these studies.

4.4 Methodology

Many “methodological” problems have surrounded most investigations into psychological and social aspects of infertility and infertile treatment. The intention here is to

review these studies with a view to providing a stronger framework for the current research on Iranian population.

4.4.1 Psychological consequences due to Treatment as opposed to being Infertile

In order to have a clear picture of what is psychological reaction to infertility, as distinguished from those triggered by treatment, investigators need to assess patients before initiating treatment, during treatment and after the completion of the treatment. This, however, has hardly been the case in the studies reported (e.g. see, Berg & Wilson, 1990, 1991; Koropatrik, Daniluk & Pattinson, 1993) partly in view of logistic problems associated with trying to identify and monitor patients over a relatively long period of time and partly in view of general neglect of the significance of studying the impact of treatment as distinguished from general reactions to being infertile.

Highlighting the significance of practical problems for research are the reports that IVF couples may show less distress than other infertile couples during treatment simply because they do not wish to be seen as medically stressed and would like to behave more normally (Dunkel-Schetter & Lobel, 1991; Litt, Tennen, Affleck & Klock, 1992).

Indeed Greil (1997) highlights that pretending to be “normal” may also be due to the fact that these patients get the impression that the health care professionals will treat their infertility as a medical rather than a psychological problem. They may even suspect that gaining access to high-tech treatment may involve formal or informal psychological screening.

4.4.2 Sample Size

It has been estimated world wide the lifetime prevalence of infertility varies from 13.7% to 24% with the majority of studies agreeing on an overall rate of 15% of the total population (Benson & Robinson-Walsh, 1998). Therefore, there is a need for larger samples in

order to be able to generalise the findings over this large population. Larger samples not only afford better power to detect effects if they exist (i.e. reduce likelihood of type II error), but they also permit more sophisticated multivariate data analyses that may be appropriate (Dunkel-Schetter & Stanton, 1991). Most studies reported are either case studies (Greil, 1997) or on relatively small sample sizes (for a review see Eugester & Vingerhoets, 1999).

The subject of sample size also applies to the use of “control” group. For example in a study by Brinsmead, Guttman, Oliver, Stanger, Clark and Adler (1986) 556 IVF couples were examined on a psychological basis and were compared with just 20 gynaecological patients.

It is appreciated that the present study is also based on a relatively small sample size! The reasons and justifications for this are taken up in chapter 8 General Discussion.

4.4.3 Little research on couples

The importance of the psychological assessment of the infertile couples as distinct from just studying men or women was stated at the beginning of this chapter as well as chapters two and three. When examining the subject of infertility there are three possible approaches: either focus on women only (e.g. Bell, 1981; Bents, 1985; Matthews & Matthews, 1986; Callan & Hennessey, 1988; Domar & Seibel, 1990; Domar et al., 1992b; Carmeli & Carmeli, 1994; Boivin & Takefman, 1995) or the focus may only be on men (e.g. Glover, Gannon, Sherr & Abel, 1996; Band, Edelmann, Avery & Brinsden, 1998) or the approach could capture the couples (e.g. Benazon et al., 1992; Edelmann et al., 1994).

The argument is that whilst focusing on just one particular gender is of great interest it may not give a complete picture of psychological aspects of infertility and infertility treatment. Even today there is a tendency to only look at how women are affected by infertility (Costigan, 1992). For example, Domar et al. (1992a) examined 338 infertile women (not their partners) and compared with 39 healthy women (with gynaecological cases) for their psychological

reactions to infertility and infertility treatment. The result showed that infertile women felt more depressed than the control group. This finding of course tells us nothing about the psychological reactions for the women's partners and whether or not women's depression has any association with their male partners' depression scores.

Whilst research on infertile women only has been more popular, nevertheless there is also a growing body of studies on male infertility. These studies however, are either based on anecdotal materials (e.g. Berger, 1980; Adler & Boxley, 1985, McEwan et al., 1987) or lack adequate controls, or did not assessed their partners emotional reactions (Glover et al., 1996; Hurst et al., 1998; Band et al., 1998) or are focused on Western men only (see, however, Baluch et al., 1998). Indeed what has been reported is also not consistent. For example, whilst Adler and Boxley (1985) and McEwan et al. (1987) reported no psychological reaction to infertility for men, Connolly et al. (1992) reported significant anxiety levels for infertile men and Kedem et al. (1990) found infertile men showed lower self-esteem, higher anxiety and more somatic symptoms than fertile men.

Most importantly, in the absence of data from the partners of these men one cannot build upon a clear picture of psychological reactions to infertility and infertility treatment. Conceiving a baby is an act that requires both a man and a woman, not being able to conceive will also affect both. Singling out one part of this equation will leave the researcher unclear about the complete picture.

4.4.4 No Control Group

Absence of either a control group or an appropriate control group is of great importance to research on psychological aspects of infertility and infertility treatment. For example, Harrison, Callan and Hennessey (1987) when examining stress level of 500 men during IVF treatment found that there was evidence of fluctuation in their reported scores.

However, although the sample size is fairly large, in the absence of a control group of men who are either fertile but are not under treatment (norms) or who are fertile but are being treated for illnesses other than infertility, it is hard to say that the stress level are as a) significantly greater than normal population and b) the level of stress was due to the treatment itself, e.g. the level of stress may be experienced due to many things in the patient's life, for example, work, or finance, and not necessarily triggered by infertility or infertility treatment.

In a similar fashion in a study by Benazon et al. (1992) 461-clinic couples were assessed for levels of stress. In this study, women had higher scores on stress and experienced infertility more centrally than their partners. Although the sample size was significantly large, in the absence of a control group of fertile couples attending the clinic for illnesses not related to fertility further generalisation of the levels of stress and gender differences was not very clear. Examples of studies not including a control group are numerous (see Table 4.4.4.1).

As noted in Table 4.4.4.1, there are many studies that have only used published norms as a source of comparison "control" group. The problem with this comparison is that norms may change by time and need updating. Further argument on what would be an appropriate "control" group are taken up in the next section.

Table 4.4.4.1 Selected studies widely cited in the literature since 1990 that have not included a control group (taken from Greil, 1997)

| Authors | Sample | Methods & Measures | Findings |
|--------------------------------------|--|--|---|
| Berg & Wilson (1990) | 104 clinic and Resolve couples compared to published norms | Symptoms Check List | Infertile women more distressed, but many scale items misleading |
| Andrews et al. (1991) | 157 infertile couples, compared to how they felt at different time points | Couples were assessed at 3 time points, one year apart | Fertility problem stress has consistent and negative effects on life quality; data was only from first wave |
| Slade et al. (1992) | 47 clinic couples with primary infertility targeted and finally 28 couples completed the follow-up | 2 measurements taken 3 years apart | Time does not affect anxiety, depression, or self-esteem; intercourse less frequent, communication deteriorates over time |
| Edelmann, Connolly & Bartlett (1994) | 152 1st time IVF couples compared to published norms | Used single item measures of marital and sexual functioning | There was little deviation from norms |
| Beaurepaire et al (1994) | 113 to start IVF & 217 repeat cycle couples, compared to published norms | Centre for Epidemiological Studies Depression Scale; State-Trait Anxiety Inventory; Questionnaire; Intimate Bond Measure | Women higher on clinical depression than norms; men experienced anxiety when producing semen in the hospital |
| Abbey & Halman (1995) | 113 infertile couples | Couples were assessed at three time points, one year apart | Perception of control declined over time; for women, sense of general control correlates with infertility control |
| Boivin & Takefman (1995) | 40 IVF couples, compared to how they felt throughout IVF treatment | Infertility stress reported on daily basis through one IVF cycle | Women who do not become pregnant, experience more stress; difference between groups does not emerge until biological feedback was available |

4.4.4.1 What is the most appropriate control group?

One could consider a various “control” populations as appropriate for infertility investigation. One such control could be couples attending a gynaecological clinic either for routine check up or for illnesses not related to infertility. The scores from such couples may help distinguish general psychological reactions due to attending clinic as those opposed to infertility treatment and or being infertile. Another control may be using general population norms and scores. This would be useful but suffers from the fact that it cannot reflect general psychological reaction due to attending “testament” of some sort or may be encompassing a wide range of heterogeneous populations. Perhaps the best approach would be to use both a control group of homogeneous clinical fertile patients and use scores taken from population as a whole for any comparisons. Dunkel-Schetter and Stanton (1991) also recommend the use of appropriate control group, they emphasise on the choice of type of groups as appropriate for the nature of investigation. By choosing particular groups as “controls” an investigator may be able to distinguish distinct effects of various psychological or social aspects of infertility. For example, infertile individuals might be contrasted with a control group of individuals who adopt, or a control group who choose to remain childless, or a control group who already have a child. Nevertheless many studies have based their conclusions on comparing the results with published norms (see Table 4.4.4.1).

4.4.5 Measurement and Instruments: Self-report and Standardised Questionnaire

According to Dunkel-Schetter and Stanton (1991) and Greil (1997) there are many studies that have used self-report measures as an indication of degree of psychological distress of infertile men and women. Such measures, however, could always be contaminated with participants, desire to give a socially desirable response rather than a response based on a true belief of the respondent. This is, of course, not unique to studies of the psychological

consequences of infertility but is, rather, a problem for many social psychological measures. There is, however, some reason to believe that this problem of social desirability may be greater when testing infertile couples than in other types of research (O'Moore et al., 1983). There is some reason to suspect that social desirability bias might be more of a factor for infertile men than it is for infertile women (Greil, 1997).

In a similar fashion Baluch et al. (1998) found that when men had to respond to their authoritarian role in their household after being diagnosed as being infertile their response was significantly different from what their spouse reported about their authoritarian role! This demonstrates that men may "lie" more than women to help to save their macho status.

Further support comes from studies by Lalos et al. (1985) and Harrison et al. (1986) which also reported that infertile men had higher "lie" scores than their partners. Berg and Wilson (1990) suggest that infertile men may have a stronger tendency than infertile women to present favourable images of themselves to researchers and clinicians. Therefore, it may be argued here that caution should be taken to ensure sincerity of responses taken from the participants.

Another source of worry is the use of standardised questionnaires such as the EPQ- Eysenk Personality Questionnaire (Eysenck & Eysenck, 1975) and BDI- Beck Depression Inventory (Beck & Steer, 1988). Such measures, whilst valid measures to indicate different psychological traits (such as extroversion, neuroticism), may not necessarily be sensitive to discriminating the true psychological reactions due to infertility. There is thus no surprise that some researchers using the latter type of measures have reported no difference between infertile participants and norms. Dunkel-Schetter and Lobel (1991) emphasise the fact that most measures of psychological stress do not distinguish infertile individuals from others. For example, Edelman et al. (1994) examined 152 first time IVF couples for their psychological reactions to IVF treatment and their coping strategies. The authors administered Eysenk Personality

Questionnaire to the patients. Contrary to the authors' expectations, the result showed that these patients did not differ from the norm, indicating that these couples are, in general, psychologically well adjusted, irrespective of their fertility history and duration of infertility. At best standard scales may be argued to be incomplete for infertility research. According to Dunkel-Schetter and Stanton (1991) some instruments such as the MMPI- Minnesota Multiphasic Inventory (Hathaway & McKinley, 1951) may seem offensive to infertile subjects and may need changing, (e.g. the item "something serious is wrong with your body" in Questionnaire Symptom Checklist-90-Revised, SCL-90-R; Derogatis, 1983).

Other questionnaires may be impractical simply because of their length, method of administration or even not match with the level of education or language of the population. Dunkel-Schetter and Stanton (1991) maintained that care should be taken when choosing appropriate scales suitable for the particular population studied. Many of the instruments have not been developed for general population studies and are therefore not useful in urban public clinic settings where level of education and fluency is different (Dunkel-Schetter & Stanton, 1991).

Moreover, standard scales should not be the only scales used. If there is no appropriate and suitable measure the argument is that new items must be developed instead. According to Dunkel-Schetter and Stanton (1991) the advantage of developing measures for studies of infertility is that they can be adjusted for the targeted populations, and they can include all theoretically and clinically important factors. It is emphasised that the important aspects of subjects' experiences could be missed, if only standard scales are used. In addition one may include open-ended questions in order to supplement quantitative assessment tools. Using open-ended questions and letting participants/subjects express their feelings and experiences in their own words, can provide further information which could lead to better insight into the

obtained results and provide ideas for additional hypotheses (Dunkel-Schetter & Stanton, 1991).

The issue of developing specific questions becomes even more salient if one considers different cultural groups. In particular when Western developed questionnaires are translated to apply to Eastern population the results may be subject to scrutiny and debate (Berliner, 1988; Abu-Hilal & Aal-Hussain, 1997). Thus the general conclusion is to develop new items specific to psychological and social aspects of infertility and infertility treatment.

4.4.6 When to assess patients?

Another methodological problem in the study of the psychological consequences of infertility has to do with inappropriate timing of measures taken (Dudok de Wit, 1992). Edelmann and Golombok (1989) maintain that it is very hard to make an appropriate psychological and biological measurement of the couples' stress at an appropriate time. Perhaps the best timing for assessing patients is: a) before the diagnosis is made (Tennen et al., 1991), b) during treatment and, c) after treatment.

There are many studies that show that the experience of infertile may be likened to a roller coaster of psychologically stressful feelings (Atwood & Dobkin, 1992; Hynes et al., 1992). For example Hynes et al. (1992) studied women's depression and self-esteem on two separate occasions and reported significant changes in depression and self-esteem at different stages of IVF treatment. At first assessment, there were no significant differences in depression and self-esteem between infertile women and the controls. But at the second assessment, where the women had learned that their attempt at IVF was unsuccessful, there were significant differences in both depression and self-esteem.

4.5 Chapter Summary and Conclusion

In short many weaknesses can be attributed to research on psychological and social aspects of infertility and infertility treatment. Issues such as lack of strong theoretical underpinning, methodological issues such as focus on one particular gender rather than infertile couple, small sample size and lack of control group or inadequate control group(s). Lack of specifically developed questionnaires tailor made to the needs of infertile patients and most importantly appropriate in time to assess patients psychological status. In particular a measure must be taken prior to any “contamination” due to diagnosis and treatment. However, what is most important, in addition to what has been said, is the neglected issue of cultural difference which renders generalisation of a mainly Western literature to all cultural groups doubtful. This is the subject taken up in the next chapter.

5 Chapter 5: Part I: The role of culture in Psychological and Social aspects of Infertility

Part II: Iranian culture - Infertility and infertility treatment

5.1 Preface

The aim of this chapter is to highlight why the issues of psychological aspects of infertility and infertility treatment are important to be examined in different cultures. In particular following factors might account for cultural specific psychological and social aspects of infertility and infertility treatment: 1) what people in different culture groups believe to be the cause of infertility, 2) what they think would be an appropriate treatment, 3) their attitudes towards medical intervention and modern medicine, 4) the role of religion and issues related to adoption, 5) social factors such as attitudes towards family and children (see Greil, 1991; Inhorn, 1996; Baluch et al., 1998).

In a follow up argument, in part II the focus will be on the Iranian culture and how issues outlined above (i.e. diagnosis, treatment, modern medicine, religion and attitudes towards children) may affect Iranians' psychological and social extroversion to infertility and infertility treatment.

5.2 The significance of the neglected cultural factor

Although there has been a recent growing interest in examining psychosocial aspects of infertility and infertility treatment, a great deal of research is basically "Westernised" (Greil, 1997; Burns et al., 1999). In fact apart from few studies by the author and colleagues there has not been any significant number of systematic investigation on either the ethnic minorities or on non-Western populations (Dunkel-Schetter & Stanton, 1991; Greil, 1997). This leaves a

major gap in our understanding of the universality as opposed to cultural specific aspects of psychological and social reactions to infertility and infertility treatment (Baluch et al., 1998). While it may be true to argue that in almost all cultural groups infertility may be perceived as a crisis (e.g. Rosenblatt, Peterson, Portner, Cleveland, Mykkanen, Foster, Holm, Joel, Reisch, Kreushcher & Phillips, 1973; Mo, 1984; Uka, 1991; Bornman, Schulenburg & Boomker, 1994; Inhorn, 1994; Neff, 1994; Miranda, Larrazabal & Laban, 1995) the degree and nature of underlying reasons aggravating such a “crisis” may vary significantly across cultural groups. For example, whilst reported studies on Western women (e.g. Edelmann, 1990) show that IVF itself may produce considerable psychological distress, Baluch et al. (1993) reported that Iranian women may welcome any aspect of a stressful treatment (psychologically) insofar as their goal for conception is concerned. This is due to Shi’te Muslim’s religious ritual for self-inflicted wounding as a form of spiritual purity. In this respect undergoing stressful IVF treatment is seen as fulfilling this objective. McGoldrick (1982) has argued that different cultural groups have different ways of feeling pain, describing a symptom, expressing medical and psychological problems, interpreting the cause of illness. They also differ in their attitudes toward helpers, therapeutic techniques and treatment outcomes. Such preliminary cultural observations have already shown their impact on psychological aspects of infertility and infertility treatment.

Blenner (1991) has argued that cultural factors may affect different procedural aspects of treatment e.g. because it may not be easy for Middle Eastern, Asian, and Mexican-American men to collect semen via masturbation- they may be more distressed to produce it in the clinic. It is therefore important to understand cultural aspects of infertility and infertility treatment and find ways to tackle the problem. For example, it was reported that providing special condoms that could preserve collected semen during intercourse useful to most patients of

ethnic minorities (Blenner, 1991). In fact the procedure for producing semen in the infertility clinic, in general has been reported to be stressful within even Western patients (Beaurepaire et al., 1994).

Moreover, in terms of understanding cultural factors amongst “Western” medical staff Blenner’s (1991) study reported that there were three categories of health care providers namely: culturally unaware, culturally intolerant, culturally sensitive. The group who were classed as culturally sensitive were more successful in their interaction with patients as more information was collected from their clients. This is because they learned more about their clients’ culture and religious beliefs and tried to approach the clients in the way which was culturally acceptable for them. Others classified as unaware or intolerant were shown to have such impact on clients that they self-terminated prematurely or were referred to more culturally tolerant providers. In view of such considerations one may argue that cultural difference/variability plays an important role in the way individuals perceive, react to, and resolve their infertility problem (e.g. Cooke, 1987; Greil, 1997; Molock, 1999).

5.3 Attitudes Towards Medicine

Although medical sciences has made great advancement in the treatment of infertility, yet cultures differ in how much trust they have in modern medicine. Moreover, people in different cultures may react differently to the treatment by egg and sperm donation.

Regarding the issue of medical trust in Western societies people mostly search for a medical reason if they have a health problem. In a study by Strauss, Hepp, Steading and Mettler (1998) on infertility patients, most of the participants, male 39% and female 46%, had high values and trust in medicine to solve their problem.

In contrast, in more traditional societies, the patient is not very convinced by the scientific, medical reasoning (Inhorn, 1996; Greil, 1997). In some traditional families, before consulting

the doctor the individual seeks traditional methods for curing the medical problem. These methods may be either consulting a religious remedy and the supernatural or some domestic remedies (Inhorn, 1996). For example according to Wolf and Huang (1980) solutions open to the traditional Taiwanese peasant woman included appealing to the gods, consulting a diviner who could read her “flower fortune,” trying herbal remedies, and adopting a female child to encourage the birth of a son. Infertile women among the Yoruba are often encouraged to adopt a child of a relative in the hope that the spirit of a child who is loved and nurtured will attract a natural child to the infertile woman. The practice of polygamy was also adopted as a way of dealing with female infertility. In this case, the husband is advised by the first wife to marry a younger woman in the hope that the spirit of the child of the second wife will attract a child for the first wife (Gbadegesin, 1993).

Within Muslim culture although there is a very strong belief that God controls every individual's life, nevertheless, when facing a medical problem the doctor and the medicine are considered important alternatives (Rodjouei & Zamani, 1998; Pahlevani, 1996). The issue of God's will and believing in Heavenly powers influencing one's life, however, ties in with the psychological theory of locus of control (Rotter, 1966). Theory of locus of control indicates that people differ in the expectations they hold about the sources of good and bad things that happen to them. People who are internals credit themselves with the ability to control the occurrence of reinforcing events, both positive and negative. Other people, who are externals, perceive reinforcing events as under the control of luck, chance, or powerful other individuals-factors external to themselves (Rotter, 1966). Miller (1984) has stated that cultures based on individualistic values like Western Americans and in general Western culture are more internal and cultures in which people are interdependent like Eastern culture, people are external. This shows that people differ in the ways in which they respond to failure and success experiences if

the outcomes of the tasks on which they perform are said to be due to skill or chance. Therefore, it is not surprising that in developing traditional societies, when a problem like infertility occurs, the individual repeatedly tries biogynaecological remedies while still feeling that everything is up to “God’s will” (Inhorn, 1996).

5.3.1 Islam and controversial aspects of infertility treatment

Undergoing infertility treatment in particular, IVF, GIFT and IUI, may involve some controversial issues that may conflict with different personalities (see Baluch, Falone & Khan, 1994) and in particular with different cultural values and religious beliefs (Baluch et al., 1995). Baluch et al. (1994b) found that certain personality traits, namely extroversion and neuroticism, correlate with aspects of human reproduction such as egg and sperm donation. Moreover, Baluch et al. (1995) found whilst Western and Iranian women differ significantly in their attitudes to whether God is responsible for their infertility, nevertheless both groups of women are strongly against sperm donation. Indeed in South Africa, using assisted reproductive techniques is not accepted because the child would not be seen as belonging to the husband. This is the same even in the case of donated sperm belonging to the husband (Bornman et al., 1994).

Islamic law, however, known as the Sharia, is based primarily on the Quran (the Islamic Holy book) and the Hadith, the authentic traditions and sayings of the prophet Mohammed. Islam also views sexual relations within the context of procreation and family building. Because procreation is considered a duty in marriage, Islam encourages the treatment of infertility, so IUI, IVF, and ET are deemed appropriate interventions, as long as they do not involve gamete donation. DI, embryo donation, surrogacy, and adoption are forbidden because they are viewed as either adulterous or violations against legal inheritance. If the sanctioned assisted reproductive technologies are unsuccessful, Islam promotes acceptance by the couple that the

marriage will remain childless (Schenker, 1996).

In short, there are many reasons to believe that there is no universal attitude to modern medical practices and the new treatments in various cultural groups. The worldviews of ordinary people in contemporary society are not always based on scientific logic and scientific evidence. Islamic law and cultural values govern many aspects of infertility and infertility treatment.

5.4 Religion

".....and when Rachel saw that she could bear Jacob no children, Rachel envied her sister and said unto Jacob, "Give me children, OR ELSE I SHALL DIE." And Jacob's anger was kindled against Rachel, and he said, "Am I in God's stead, who hath withheld from thee the fruit of the womb?"

(Genesis 30: 1-2, New American Bible 1980- Gonzalez, 1988)

Religion and fertility have always had the strongest ties. Being infertile is not being seen as favourable by all biblical accounts. In a study by Sewpaul (1999), some of the Christian leaders expressed the view that God was omnifelicitous and not punitive, and that God's gifts, even one such as infertility, come in many forms. At the same time, they quoted various examples from the Bible that indicated a direct correlation between worthiness and fertility. Infertile women who ultimately conceived did so because they were seen to be worthy in God's eyes. Those who were unworthy, such as Michael (2 Samuel 6:23), remained barren for the rest of their lives (Sewpaul, 1999).

The Hindu tradition interprets infertility suffering as retribution for wrongdoing in previous lives (Sewpaul, 1999). Within the Christian tradition (Griel, 1991), as well as Muslim tradition (Inhorn, 1996), the most common explanations for suffering have centred around the notions of "God's will" and suffering as punishment for sin. This kind of belief tends to blame the

individual for being infertile. This tendency of traditional theodicies to blame the infertile victim for his or her own suffering may mean that all theodicies have some built-in limitations to their ability to comfort sufferers (Greil, 1991).

With Muslims, as observed by Inhorn (1996) God is seen as punishing those who doubt his wisdom. Thus, infertile women who lament their fate and ask repeatedly “why me?” are considered unlikely to receive God’s favour of children. As one woman explained: “God gets angry and will never give you” (Inhorn, 1996, p81).

In fact Inhorn’s (1996) anthropological investigation into the culture and the customs of Egyptian women with regard to their infertility, has to this day been a major source of investigation in an Eastern (traditional) society. The beauty of her work is where she make the victims (infertile women) feel at ease with her as a researcher. Marcia Inhorn spent 15 months in Egypt and interviewed the women in their own home and studied the nature of their agony-in relation to their infertility. Such approach was seen as more favourable than using questionnaires and hired researchers. She was kindly invited to these women’s homes and welcomed by their neighbours and their extended families. Indeed in view of the similarities of Iranian and Egyptian cultures (the former being the main focus of this thesis) much has been learned about both cultural groups.

5.4.1 Religion and psychological distress of infertility

Bearing in mind such strong religious views in relation to infertility, there is no surprise that degree of religiosity should interact with people’s psychological and social reactions to their infertility problem. As commented by many investigators, religious belief and practice may have a significant role in the infertile couple’s life (Jindal & Gupta, 1989; Inhorn, 1996; Griel, 1997; Molock, 1999; Riessman, 1999).

Zoldbrod (1993) reported that most Western religious patients felt overcome by guilt and

shame because of past sins. Some patients believe that God has infinite powers, and that He sees and approves of everything that occurs to every mortal on earth at every moment. At the same time, there is the conviction that God is kind and just and inflicts pain and punishment only on people who have been evil, that “everyone gets what he or she deserves” (Zoldbrod, 1993, p47).

Sonawalla, Parikh and Parikh (1999) have examined the relationship between psychological distress and religious belief amongst infertile patients in India. The findings showed that those patients who had stronger religious beliefs had a poorer way of coping with the psychological distress of infertility. The authors explained this finding in the light of religious context which is responsible for such a poor coping mechanism. Those couples who are quite religious leave everything to fate or God, thus do not explore adequately other coping mechanisms such as problem-solving and do not try actively to find solutions to their problems. As a result of such cultural and religious behaviour, it is argued to have affected their level of psychological distress.

However, the manifestation of psychological distress may be different amongst Western and Eastern religious people. In the West Greil (1991) provides us with an argument which defines the link between contemporary secular medical model with the religious related behaviour, “theodicy”. When an individual experiences radical disruption e.g. infertility, she calls out for explanation. Even among people who staunchly reject religion, infertility is often attributed to some wrongdoing on their part (De Brovner & Shubin-Stein, 1975). The “why me” syndrome is classic among infertile Western patients (Menning, 1977; Mazor, 1978).

However, Baluch, Manyande, Aghssa and Jafari (1993) who assessed the psychological aspects of infertile Iranian women (all Muslims) to their infertility problem found that in spite of going through many invasive procedures, the patients found more comfort and relief by

relating their problem to God's will.

5.4.2 Religion, culture and adoption

Adoption seen as a last resort for infertile patients and perhaps a source of psychological comfort is also deeply rooted in religious beliefs and cultural values. Thus yet another important cultural factor may affect the infertile patients' option of finding a way to resolve their infertility problem (Greil, 1991).

Cultures differ in the extent to which they attribute importance to blood relationships, and this almost certainly affects both how infertility is regarded and what is done about it. For example, while Korea and Taiwan both put an emphasis on having sons, the traditional cultural responses to the lack of sons differs in the two societies. In Korea, where adopted children were regarded as full family members one could solve the problem by adopting a son (Griffis, 1882). But in Taiwan, where blood ties have been culturally more important, the traditional response to having no sons has been to adopt a daughter in the belief that doing so would "call in a younger brother" (Pasternak, 1972).

In some cultures, such as the African Hausa (Smith, 1959), the Iban of Borneo (Freeman, 1955), and the Objibwa Indians (Hilger, 1951) adopting children is a common practice in which almost half, and sometimes over half, of all households have adopted children. The experience of infertility in such societies almost inevitably differs from societies where blood ties are crucial. In Indian culture, remarriage is considered more feasible than adoption. However, caste and creed play an important role, which could be a possible factor for rejecting adoption. Ambiguity of familial boundaries, which seems to be a major problem in infertile couples, may also be a reason for not adopting (Burns, 1987). This loosening of a couple's external boundaries to include professionals, other family members (e.g. parents), and even a child who is not their own can often precipitate a crisis in the couple's life (Chandra,

Chaturvedi, Issac, Chitra, Sudarshan & Beena, 1991).

By Islamic law legalised adoption as it is widely practised in the West is not allowed (Inhorn, 1996). Orphans cannot be officially “adopted,” they cannot 1) inherit from adoptive parents, 2) receive the family name of the adoptive father if their own family name is known (or their family name has been chosen by the police), and 3) be fully considered as the children of the adoptive parents. Adoption is illegal unless the child keeps his/her own original name (Inhorn 1996).

5.5 Cultures and diagnosis of infertility

Cultures differ significantly in what they attribute to be the “cause” of infertility. Such belief may be argued to have a great impact on psychological and social aspects of infertility and infertility treatment. In a society in which it is believed that the major cause of infertility is either a woman’s fault, or a man’s fault would without doubt have greater impact on a specific genders psychological and social reactions than in a culture in which the views are more scientifically based. For example, it has been noted that Greek (Lee, 1953) and Polish peasants (Benet, 1951), Oceanic Truk islanders (Gladwin & Sarason, 1953), and Klamath Indians (Pearsall, 1950) blame the woman for infertility. On the other hand, the Ashanti (Christensen, 1954) believe that only men can be infertile. Indeed causes of infertility across different culture groups could range from “physiological”, to supernatural. The Ganda believe that infertility occurs when a woman’s womb has turned over (Mair, 1934). The Dogon (Calame-Griaule, 1986) and the Ashanti (Field, 1970) maintain that infertility sometimes results from difficulties in the marital satisfaction. According to the Trukese, the hard work that women do may lead to a “bad stomach” which causes infertility (Fischer, 1963). The Amhara believe that women’s infertility follows from “loose living” (Messing, 1957). The North African Somali attribute infertility to astrological influences (Galaal, 1968). For the Ashanti, the source of the problem

is usually a witch who has eaten the spiritual counterpart of a woman's womb or a man's penis (Field, 1970).

However, it is important to note that not all societies attribute infertility to a single cause. Spirit mediums of the Aowin people of Ghana may diagnose infertility as caused by witchcraft, non-observant of prescribed behaviour, disrupted social relationship, or quarrels between matrilineal kin (Ebin, 1982).

In most religious dominated cultures, in particular Islamic societies, the main cause of infertility is seen as being God's will. With Muslims, as observed by Inhorn (1996) God is seen as punishing those who doubt his wisdom.

As will be explained in next section, most Iranian infertile men and women see God's will as the main cause of their infertility, the medical explanation is only useful to them insofar as who is infertile (man or woman or both) (Baluch, 1992).

However, as argued by Griel (1991), in spite of advances in medical technologies even in the Western world and the stigma that Western beliefs may not necessarily be tied to religious or supernatural beliefs, many still share some beliefs about the cause and treatment for infertility that are not much different from what was outlined before. Greil (1991) provides the analogy of the Taiwanese peasants with some Western research that believes that by adopting a child it enhances the possibility of having one's own biological child. In a different analogy, Greil (1991) maintains that like Truk islanders and Klamath Indians, many Westerners see infertility as exclusively a woman's problem. However, while it may be true that Westerners seldom advise their infertile friends to visit a sacred shrine, the often-heard recommendation to take a vacation may perhaps be regarded as a secularised version of the same solution (Griel, 1991). Moreover whilst the religious non-Western individual accepts his/her behaviour as responsible for their misfortune the Westerner may apply the same analogy. For example according to

medical model (Griel, 1991), since heart attacks have been linked to diet, the opportunity is ripe for developing the idea that heart attack victims have brought about their own plight by failing to maintain a proper diet (Griel 1991). Similarly, if medicine finds links between aspects of human behaviour and its impact on reproductive organs (e.g. relation between smoking and quality of sperm) one may find many Westerners blaming their own behaviour for their own infertility problem.

5.6 Part II: Iranian culture - Infertility and infertility treatment

5.6.1 Preface

The Iranian society is heavily governed by religious beliefs and traditions which govern many aspects of life, including producing offspring. In Iranian society offspring assure the continuation of the family line, the carrying on of the family name, uninterrupted control of a family farm or business, perpetual ownership of family property, and other benefits associated with permanence. For Muslim men in particular, having children to immortalise their names is a personal motivation.

Consequently in Iran, infertility, or the inability to conceive, is a devastating problem for both men and women. For reasons that will be explained below the reasons causing distress and suffering differ for men and women and at the core of all is the cultural factor, which has the major impact on the infertile individual.

Indeed, as will be explained in this section, in a Middle Eastern country such as Iran the marital satisfaction and social reaction to infertility is so different from the West that in itself may be argued to impose its unique psychological impact on infertile men and women. Thus, it is very important to outline the pattern of the culture, tradition and the life style of Iranians for better understanding the psychological reaction to infertility and infertility treatment. Moreover, the Islamic government has now encouraged infertility treatment using modern procedures such as IVF and IUI. Such combinations of modern medicine crossing paths with Islamic and traditional Iranian values may indeed impose its unique psychological and social reactions to infertility and infertility treatment.

Therefore, in this chapter the main target is to establish which aspects of culture and religion may have an impact on the experience of infertility in Iran and the possible psychological and social reactions to treatment. What follows here in section 5.7 and its subsections, is mostly

extracted directly from the argument put forward by Inhorn (1996) in relation to desire for children in Egypt which seems to be directly applicable to the Iranian culture.

5.7 Psychology of Parenthood in Iran

In order to understand why infertile couples in Iran are stigmatised and looked down for “missing motherhood/fatherhood” in their lives, it is important to understand what children mean to individual members of Iranian society. Individual actions are usually taken into consideration, how these actions will affect other members of the most important social group, i.e. the family.

The desire for children among Iranians falls into three categories, which have also been observed with Egyptians by the work of Marcia Inhorn (1996), namely: its link with marriage; its link with fear of death; and passion for children. In fact, normal adulthood is tied up with acts of marriage and parenting (see also Baluch, 1992; Saroukhani, 1993). Marriage and parenthood are tied to each other, in which being married is not enough and being a normal adult also requires having children. Indeed, being separated from the “fertile crowd” is an undesirable position and brings with it the feelings of being considered as “less than” others and causes severe stigmatisation. Therefore, becoming a “complete” person by becoming a parent is a major reason for having children.

The Iranian culture is child loving and family oriented and therefore places great emphasis on fertility. From day one of marriage which, unlike in the West, happens at a very young stage of her adulthood, through a cultural ritual, the woman is reminded that one of her roles is to be a mother (see Baluch, 1992). To fulfil family expectations, she is expected to have a child by the end of the first year of marriage. A child is considered to be a blessing for the whole family. Women who are childless after a couple of years of marriage, become a focal point. As time goes on, they bear the blame for infertility. They are viewed as barren, bad luck and a curse on

the family. Such women lose their status in their husband's family and in the community (Baluch, 1992).

5.7.1 Continuing the family name

The desire for having children in Iran is extremely linked to fears of old age and death (see also Saroukhani, 1993). Both men and women, particularly men, speak often of their wish and desire to create lasting memories of themselves during life and after death. Children are considered as the memory of an individual who has left a trace on this earth. The famous saying as 'the one with children is not dead' explains how men and women achieve a kind of personal perpetuity after death. Children are even referred to as the 'son and daughter of so-and-so', especially after their parents' death. Therefore, for both men and women, having children gives an individual a proper name in life and also guarantees continuity of his/her name after death. All male and female children, furthermore, carry their father's family surname to future generations in a society that values matrilineal continuity (see Saroukhani, 1993).

5.7.2 Happiness in having children

In Iranian culture happiness in life means having children, which is the other categorical reason for Iranian men and women to have children (Baluch, 1992). Caring and having affectionate feelings for children are the general and popular rules among the parents. As a general rule among the parents, affection and concern for children is essential, and those individuals, primarily fathers, who are known to be tyrannical, abusive, or uncommitted to their offspring are seen as highly aberrant human beings. They are likely to be rejected in the community and lose their popularity (see also Saroukhani, 1993). In fact, parents show their great "love for children", and, more often than not, they display this love rather profusely. One

may argue that for both men and women the desire for children is for egocentric reasons, but that is a mistake because most parents both speak and behave as if they generally enjoy children and love their own. They make excessive effort to provide for their children, to the best of their financial, physical and emotional abilities (see also Fathi, 1985).

Given the enjoyment thought to derive from children, many parents are adamant that a “life without children” cannot be happy under any circumstances. Children are thought to be quality of life to a household and, by extension, to the marital partners in that household. Thus, by contrast, childlessness can only be seen as a miserable condition, leading to lives that are, “empty”, “bored”, “meaningless”, or “like boiled food without salt and pepper to give it taste” (see also Fathi, 1985).

There is a common myth shared between Egyptians and Iranians, as it is described by Inhorn (1996) for Egyptians: “Children are viewed as an extension of a woman’s self and personality, and, when they turn out well, they are her major accomplishment in life. Furthermore, given the nature of marital relationship among the urban poor, it is usually the children-and not the husband-who provide a woman with consistent intimacy and affection. In women’s words, children provide “the taste in life”. Men on the other hand, are viewed as having primarily ego-gratification needs for children, given that they are not as directly involved in the care-taking aspects of parenting. On a most basic level, children are proof of a man’s virile ability to bring life into this world, the basis of his patriarchal authority. Men are also seen as wanting to be fathers, because having children makes them equal to other married men. Furthermore, although their “paternal instinct” is considered less intense than a woman’s maternal one, most men enjoy the “noise of children in the home” and desire affectionate interactions and emotional involvement with their children” (Inhorn, 1996, p112).

5.7.3 Family ties in Iran

As children grow older, often leaving the household upon marriage, parents continue to equate the quality of their own lives with the pride, joy, and satisfaction they derive from having brought up their children to adulthood. Grown children are seen as individual's greatest "accomplishment in life," especially when they provide their parents with "something to brag about to others." Many parents also look to their grown children as their primary friends and companions, with daughters becoming "like sisters" to their mothers and sons "like brothers" to their fathers (see also Saroukhani, 1993).

5.7.4 Economical Reasons

Most parents, in particular urban, poor people, are mostly concerned with old-age security issues. In societies lacking adequate government plans for old age, children are expected to take responsibility for ageing parents, often providing them with a home and nursing care as well as with financial support. Especially in underdeveloped and developing nations, a prime motivation for having large numbers of children is to assure that some will be living to provide for the parents in the parents' old age (see also Toubia, 1980). Many children have been an economic asset, helping their parents in the fields, in tending livestock, or in providing extra income through carpet weaving (usually girls). Welfare state system does not exist in Iran, therefore, many children are necessary to ensure the survival of at least a few sons who could look after family affairs and the elders in times of sickness and old age (see Toubia, 1980).

5.7.5 Adoption in Iran

Similar to Inhorn's (1996) findings in Egypt, most Iranian women are unable to fulfil their motherhood needs by adopting children, a solution to infertility in most of the non-

Muslim world. Islam disallows adoption, although it specifies in great detail how orphans are to be treated (Esposito, 1982, 1991). The permanent, legal fostering of abandoned infants who do not take their foster father's name is available. However, unlike Western population, among most Egyptians (see also Rodjouei & Zamani, 1998 for Iranians) even permanent fostering of illegitimate or abandoned children is unacceptable for a host of cultural reasons.

Those who practice the religion, view adoption as "cheating"-as "changing God's religion"- to raise a child not of their own and give him a name, an inheritance, and a "blood". Inhorn's (1996) note of an infertile Egyptian woman echoes a similar old saying in Iran: "Those who raise other than their own children are building a house on other than their own land."

5.8 Who is blamed for Infertility

On the one hand there is the great desire for having children, on the other hand there is the question of who to blame if one is infertile? In fact, the reasons for holding the man or the woman responsible for the infertility problem (as explained in section 5.5 in this chapter), are rooted in the religious and cultural beliefs which may be argued to be tied up with the theory of procreation (Inhorn, 1994).

5.8.1 Procreation Theory/ religion and the Iranian society

Inhorn (1994) maintains that Westerners believe in duogenetic theory of procreation in which "men and women contribute equally to the hereditary substance of the foetus which is formed through the union of a woman's ovum and a man's spermatozoon" (p67). Opposite duogenetic theory, stands monogenetic theory, in which contribution is from one side and that is the man.

In fact, the information gathered by anthropologists from all over the world shows that in Iran (Good, 1980) as well as the rest of the Middle East, monogenetic theory is the most popular,

in which men are considered to contribute more than women towards conception. As a result of this belief, children are considered as the product of men and not women. The three major monotheistic religions, Judaism, Christianity, and Islam, originated in the Middle East, support the monogenetic theory (Delaney, 1991). Therefore, biology of parenthood in Middle Eastern countries, is different from Western view. In Islam, Allah as one God is the creative power who is seen as male gender. Also, symbolically this is associated with the procreative powers of earthly males (Inhorn, 1994).

In Islamic societies and the Middle East, therefore, being a father is not just an individual's social practice, but it also involves what many view as the exclusive biological act of creating the lives of one's children (see Inhorn, 1994 for Egypt; Rodjouei & Zamani, 1998 for Iran).

Because of the general belief of men being the original source of creation, in case of infertility women who are considered as a source of accommodation (her womb) for developing the foetus, receive the blame for not being able to play their role (Inhorn, 1994)!!!

Therefore, when a society considers women as the main reason for infertility the social and psychological reactions to infertility as the "missing motherhood" should be devastating. Such strong stigma of considering women as the cause of infertility gives stronger power to men to act upon their wife's in such situations. Therefore infertile women have greatest immediate threat coming from husbands who have the right under Islamic law to replace an infertile wife through outright divorce or polygynouse remarriage (Saroukhani, 1993). According to Iranian Islamic Law, a single man is allowed to have four wives at the same time, providing he is able to maintain their financial needs. One of the reasons that enables the man to have this right is if his wife is not able to have a biological child and is infertile (Safaei & Emami, 1995).

Similar to Inhorn's (1994) finding in Egypt, it is the husband's extended family members who encourage him to choose another wife because they view the present wife as a failure not

enhancing his procreativity at best. She is seen as “useless” and even as a danger to the social reproduction of the patrilineage in general. Thus, in Iran, infertile women face a great deal of social pressures, ranging from duress within the marriage, to stigmatisation within the extended family network, to outright ostracism within the larger community of fertile women.

5.8.2 What if men are medically proven to be infertile?

Interesting to note that even if men are found to be infertile still their fertile partner has to suffer. Women divorcing their partners will have difficulty in remarriage as they have lost their virginity (Azari, 1983). The fear of remaining single may therefore lead them to accept their fate and remain childless.

The severity of psychological distress caused by male infertility is quite intense in which more pressure is placed on the partner of the infertile man (Edelmann, 1989; Owens, Edelmann & Humphrey, 1993). In a study by Aghanwa, Dare and Ogunniyi (1999) in Nigeria, the wives of infertile men suffered mentally as severely as those women who were themselves infertile. In fact, this is because, the female partner of the infertile couple holds herself responsible and experiences guilt even if male factors are known to be the cause (Miranda et al., 1995).

No hope for men

The issue of sperm donation is out of the question in Iran as almost all Iranian women (and Western) interviewed by Baluch et al. (1995) maintained that they would not consider that as an option under any circumstances. In addition, religion bans sperm donation and it is prohibited by law. Thus, a man who is unable to father a child may feel that others doubt his masculinity cannot opt the option of sperm donation and will lose social respect (Rodjouei & Zamani, 1998).

5.8.3 Sex role and Male infertility in Iran

Sex-role literature maintains that high masculinity (those men who are more macho and have stronger masculine characters), and high androgyny (those women who are more feminine) are both associated with better overall coping when facing infertility problem (Speer, 1969; Recely, 1973; Wetter, 1975; Pettus, 1976; Tallichet, 1977; McCurdy, 1978).

However, this theory originated in the West and how applicable it is to men in the Middle East, raises a few questions. Would infertile men in a highly masculine culture feel less distress and cope better with their problem? or would they be even more affected than men in Western culture?

In an extensive research Baluch et al. (1998) targeted infertile men in a clinic in Tehran. During a four week period an initial sample of 185 couples were targeted, (who were referred by their GPs to the specialist gynaecology ward of Tehran University Teaching Hospital for assessment of the possible cause of infertility). One group were male cause and the other group of men were fertile with their partners being diagnosed as infertile, and finally there was a control group of fertile men who had children. A translated and validated Iranian version of Beck's Depression Inventory (BDI- Beck & Steer, 1988) and the State-Trait anxiety (Spielberger, Gorsuch & Lushene, 1970), and questionnaire related to social extroversion, attitudes towards children and their level of household control were administered to the patients. All three groups of males showed a generally high desire to have children. However, there was a significant drop in level of interest by infertile males at the follow-up stage. Prior to diagnosis, men in the two clinical groups seemed to have greater household control. After the diagnosis it seems that the balance was shifted towards wives of infertile men. There was a significant level of social isolation by infertile men in the pre and post-diagnosis stages. The level of isolation seemed to increase for the male infertile group at the post-diagnosis stage.

State anxiety was significantly higher for infertile men compared to the control group, and seemed to increase at the follow-up stage.

Interesting to note that Baluch et al.'s (1998) findings is in line with Connolly et al.'s (1992) work on Western men, which reported an increase in state anxiety scores at the follow-up stage for men who were diagnosed infertile (also see, e.g. Carmeli & Carmeli 1994; Mikulincer et al., 1998; Newton, Sherrard & Glavac, 1999).

The results of Baluch et al.'s (1998) study generally demonstrate a significant psychological and social impairment for Iranian infertile men (both male cause and female cause), with the effects significantly more noticeable for infertile men at the follow-up phase.

Such findings and similarities in psychological and social aspects of infertility between Iranian and Westerners seem to support that unless some systematic research is not conducted on different culture groups making inferences based on available theories may be premature.

Age and Infertility in Iran

Another important issue which needs to be pointed out is the age of the patients being studied in Iran. As was explained earlier, Iranians tend to marry at a young age and expect to be parents at a very young age. This may itself add to the stress on the individual. As the couples become older they may even be more stressed and this has even been observed in Western infertile patients (Neugarten, 1979; Morrow et al., 1995; Merari et al., 1996; Band et al., 1998). Therefore it is not very surprising to see age playing an important role in the life of infertile Iranian couples.

5.9 Infertility treatment in Islamic Republic of Iran

Although there is a very strong belief that God controls every individual's life, insofar as the new generation of Iranians are concerned, the doctor and the medicine are considered as

an important alternative.

However, religious groups have a major influence on everyday affairs and social life of people since the Revolution (1979). In fact, this influence exists in the field of reproduction namely: prevention of procreation, abortion and infertility treatment. Interesting to note is that attempts to aid fertility and the infertility patients are seen as a major duty in Islamic belief and the physicians are encouraged to help couples to achieve this goal (Schenker, 1992). Therefore, according to Islam, IVF and ET (Embryo Transfer) are acceptable practices. However, these procedures can be practised only when the couple are married. This is because the Islamic view inhibits the fusion of sperm and egg outside the legal marriage contract and involving third party for donation of either sperm or egg (Artificial Insemination by Donor). AID (Artificial Insemination by Donor) is considered as adultery. Therefore, practising AID is impossible in a Moslem society (Schenker, 1992).

Nevertheless, in some infertility clinics in Iran because of tremendous pressure from the couples, donor insemination has been practised and kept secret (personal communication).

Cryopreservation of pre-embryos is at present nearly routinely practised in IVF programmes and it is acceptable to Islamic law. Some Islamic religious leaders may say yes to conducting research on remaining/extra embryos resulting from IVF. They believe that this may help to increase their “Ilm” (knowledge) (Schenker, 1992).

Since Islamic scholars have very influential power on life and minds of people in Iran if the couple go ahead with a religiously forbidden technique e.g. donor insemination they may enter a life of self-blame and secrecy (personal communication with Nasseri). However, the number of clinics and hospitals providing infertility treatment with advanced technology and new methods are limited between 8 to 10 and all are mainly located in the capital.

5.10 Incidence of infertility in Iran

In a country in which teenage marriage is more or less the accepted social norm and often “must” result in pregnancy during its first year (Baluch, 1992), and since the teenage marriage (10-14 years) has dramatically increased in recent years (Shaditalab, 1997), incidence of infertility in Iran could be significant and higher than Western countries.

However, there is no systematic investigation in terms of rate of infertility in Iran and the clinics are not obliged to produce any reports on their infertility treatment and its outcome.

The review of the reports produced by some of the clinics shows that 15-20% of the married population of childbearing age suffer from primary and secondary infertility (Saheb-Keshaf 1998, Faratian 1998- personal communications). This figure includes those who seek medical help and go ahead with infertility treatment. Up to 1985 it was estimated that 400,000 infertile couples, travelled overseas to seek help for their infertility problem.

5.11 Courtship rituals in Iran

An important aspect of the literature reviewed before was focused on the sexual behaviour of Western men and women and how undergoing infertility treatment may affect this relationship. However, it is the intention of this section to highlight how sexual behaviour amongst most Iranians may be different to those of the Western men and women and how these differences might affect undergoing treatment.

Because of religious and cultural belief, every female is forbidden from having a sexual relationship with the opposite sex until she gets married (Azari, 1983). Indeed the most cherished possession for a girl in Iran is her virginity. Her chances of a reasonable marriage depend more on this vital requirement than any other features she may have. Her intelligence, her capabilities and skills, even her beauty, would not be considered if this one physical aspect of her body is not as expected. Virginity of course is only defined as an intact hymen. So, the

great test comes on the wedding night when the ritual of deflowering her is carried out by an anxious husband. In a typically traditional environment, some of the close relatives would wait outside the bridal bedroom to receive proof in the form of a bloodstained sheet or handkerchief. If there is no proof the results could be catastrophic for the girl. Although in most cases-particularly in rural areas-the girl would be returned to her family, all the present and the bride's wealth must be returned, perhaps with compensation (Azari, 1983).

On the other hand, men are allowed to start a sexual relationship with a woman before they get married. Consequently, a married woman knows less about her sexuality than her husband. She may find out more about her sexual needs and her body years after she is married. One aspect of traditional attitudes is that it is only the man who has a right to show his desire. He can show it whenever and wherever he wishes to his wife, except that any public manifestation is strongly discouraged. A man can also show sexual desire for any woman, other than those religiously forbidden to him. The person who then is reproached is the woman who should not have put herself in a situation where she could provoke the desire of the man (Azari, 1983).

5.11.1 Sexual relationship and treatment

In the 1960s, Vielle (1965) observed the behaviour of the men and women in rural Iran in rural area and stated that: "There is no physical contact during the course of the sexual act other than that of the genital organs; other erogenous zones are not excited and used by sexuality. The lower classes do not undress to make love; the bodies remain covered; it is believed that nudity can bring on male impotence. In addition, the caress is practically unknown; the sexual acts begin with intermission and ends with ejaculation, so that man and woman are physically united only in coitus" (p462).

Therefore, it is plausible to expect that the impact of infertility and infertility treatment on Iranian woman's sexual relationship would not be similar to her Western counterpart. Indeed,

because Iranian women do not (culturally) develop any sexual desire and pleasure. she would not complain that infertility and infertility treatment has intruded on her sexual dissatisfaction as it may do with her Western counterpart. In fact, her sexual activity is on a mechanical basis and if there is any pleasure out of it, it is for her husband not for her.

5.12 Chapter Summary and expected findings

In this chapter it was argued that the Iranian society is heavily governed by religious and traditional beliefs. Thus it would be an expectation that in view of such features any generalisation of research findings on psychological and social aspects of infertility based on Western population to an Iranian society would be doubtful. This chapter was therefore devoted to the possible impact of Iranian religion and cultural values on psychological and social aspects of infertility and infertility treatment.

It was argued that in Iran there is great desire for having children in order to maintain family roots and values and provide future social support. Moreover, marriage and producing offspring was considered as a holy duty by all Muslims. However, whilst there is such a great demand on the shoulders of Iranian men and women to have children, there are many obstacles that restrict and place a greater burden if they are found to be infertile. For example adoption is not customary and acceptable in Iran, nor is the issue of conception using donor sperm, even though in Iran the new reproductive techniques (e.g. IVF) are now more widely practised. Gender roles in Iran have a great impact on Iranian women. When a woman is found to be infertile she is seen as “useless” unable to re-marry or have a “normal” social life. Men on the other hand may have more options if their wife is seen to be infertile. However, when they are seen to be the main reason for lack of conception, they may become even more devastated than women. This is because Iran is a male dominated society with masculinity and producing offspring a sign of respect and manhood. Any disruptions of such expectations may lead to social isolation and psychologically distressed behaviour.

Thus in view of what has been argued above it is expected that:

- a) both men and women in Iran found to be infertile show significantly greater psychological distress and social withdrawal than the population norms or a control group of fertile men and

women, b) undergoing treatment may have a significant effect on psychological distress of the patients and may effect their level of social extroversion, c) such factors as religion, attitudes towards modern medicine and gender play an important role in predicting degree of psychological distress and social extroversion, d) if the universality of relationship between psychological distress and achieving pregnancy holds, this should also be demonstrated amongst Iranian population. Namely, there should be a significant correlation between level of psychological distress and conception.

6 Chapter 6: Developing and administering a valid and reliable questionnaire in Farsi to examine psychological and social aspects of infertility and infertility treatment

6.1 Preface

The advantage of developing measures specifically for studies of psychological and social aspects of infertility, as mentioned in chapter four, is that they can be adjusted specifically to the targeted populations, and can include items which are theoretically and clinically relevant to the research question.

Dunkel-Schetter and Stanton (1991) suggest utilising standard measures supplementing the newly designed measures. However, in the present study the great emphasis is on designing new measures. This is because it has been noticed that using translated version of the standard measures, brings with it confusing findings which are more difficult to explain with the Iranian population (Kaviani, 1989; Rodjouei, 1997; Rodjouei & Zamani, 1998). Indeed, some cultural aspects of infertility are not precisely translatable into other languages (Ahmed et al., 1998).

Moreover, it has been documented that Western developed questionnaires are not appropriate to show the person's real feelings and state of mind when translated into Farsi- spoken language in Iran, and therefore, almost all of these questionnaires have had to be modified (Kaviani, 1989; Monfared, 1992; Pour-Shahbaz, 1993). In a study by Kaviani (1989), translated version of set of Questionnaires (the EPQ- Eysenk Personality Questionnaire, BDI- Beck Depression and State- trait Anxiety Inventory) failed to show any differences between psychiatric patients and a control group who did not have psychiatric problems. Therefore, validating a translated version of a standard Western questionnaire into Farsi may be questioned.

In view of what is said in chapter four and argued above, there is a need to develop a valid and reliable questionnaire in order to examine psychological and social aspects of infertility and infertility treatment. The present chapter will outline the procedures and the steps taken in developing this Questionnaire. In doing so the following steps were taken:

Step One: The identification of factors/categories that have been argued to play a key role in shaping the psychological and social aspects of infertility and infertility treatment.

Step Two: Creating items in Farsi that were relevant to each of the factors/categories identified in Step one. This was as followed by a Q sorting procedure in order to eliminate the least related items per each of the categories.

Step Three: Formatting the questionnaire. The method of scoring was chosen carefully in order to get an appropriate response from the participants.

Step Four: Administering the questionnaire to a population of Iranians for the purpose of establishing validity and reliability measures.

The results of the Factors analysis (Principal Components Analysis) and reliability test (Cronbach's alpha) are reported in the final sections of this chapter.

6.2 Step One: The Identification of Factors

In a previous study by Baluch et al. (1998), a combination of standard questionnaires for measuring psychological behaviour and items created by the authors was used. In particular, psychological aspects of infertility were measured by Iranian translated version of Beck's Depression Inventory-BDI (Beck & Steer, 1988), and the State-trait Anxiety Inventory-STAI (Spielberger et al., 1970). However, issues related to social extroversion were simply measured by items developed by the authors. It was noted that a) for a more comprehensive understanding of psychological and social aspects of infertility, in particular for Middle Eastern population, there is a need for more factors to be incorporated in the items of

the questionnaire. For example, items related to the patients' attitudes towards medicine and religion, b) although standard depression and anxiety measures have been widely used in the literature, as argued in chapter three, such measures may not necessarily reflect the anxiety and depression experienced by an infertile patient. More specific and relevant items must be created to indicate the true psychological profile of the infertile patient. More importantly a direct translation of items from a Western developed questionnaire for a Middle Eastern population could be questionable (see e.g., Berry, Poortinga, Segall & Dasen, 1992). Thus it was argued to incorporate factors that specifically related to issues of infertility and infertility treatment particularly for the Iranian population. The factors identified were as follows: psychological distress- consisting of those items which properties to measure depression and anxiety, social behaviour and extroversion, family life (e.g. marital and sexual relationship, interaction with children, attitudes towards male dominance), trust in modern medicine, and finally attitudes towards religion.

6.3 Step Two: Creating items in Farsi

As a result of considering the above factors, and based on the author's experience in dealing with patients, a cohort of 200 items/statements was developed and subjected to a method known as Q sorting (Stephenson, 1953).

6.3.1 Q sorting

Based on this method the researcher prints his/her intended statements each, on a separate index card, and together with a list of selected categories distributes amongst a number of judges. The role of these judges is to decide which statement belongs to which category, beginning with the strongest related statement to those not strongly representing that category. For example, a statement such as "I worship every day" may properly belong to a

category labelled as religious belief whilst “I am worried about future” may not be directly related. This Q sorting method has the advantage of reducing the number of statements to those that are judged to be more directly relating to the intended categories in the questionnaire. Generally the statements are ranked from 10 as strongly relating to the category, to 1 as least relating to a category. The researcher then selects the top ranked statements and leaves those statements that have taken lowest ranking according to all judges (see Stephenson 1953 for more details about this methodology).

In the present study 200 statements were chosen and each printed in Farsi on an index card. The cards were then presented to three Iranian psychologists who were asked to place them in different piles, depending on how strongly they link to a particular category “theme”. For example, all items considered by the judges to be representing attitudes and individuals’ level of trust towards medicine were piled together under a category labelled “trust in modern medicine”. The Iranian psychologists agreed that the 200 statements represented 10 categories. The psychologists were then asked to rank order each statement in a particular pile (category) as to how strongly they measure that category.

Statements that were considered by all three judges as being weak representations of a specific category were then excluded from the study. This reduced the items/statements to 128 items.

It has been agreed by Kline (1993) that in a factor analytic study, no matter how brilliant the rotation and how elegant a simple structure has been reached, if no relevant measures for a certain factor are entered into the analysis no factors will emerge. For example, for measuring religious belief, items must directly and strongly be related to religious practice and belief. Thus in exploratory factor analysis a good method of sampling variables is essential. Therefore, by a careful review it was ensured that essential items are provided for measuring the factors in the present study.

6.4 Step Three: Formatting the Questionnaire

A Likert-type rating from one to four: 1) Strongly Agree; 2) Agree; 3) Disagree; 4) Strongly Disagree, adopted for each item. The items are presented as statements to which the respondents are asked to “strongly agree”, “agree”, “disagree” or “strongly disagree”. This spread of options allows respondents to feel able to express themselves and at the same time there are not so many as to make the choice difficult. This method let strength of feeling affect scores. The items are forced choice, i.e. there is no “don’t know” or “no opinion” category. In this type of scale the respondents feel able to express themselves more precisely and it is more appropriate for research on marital relationships (Rust & Golombok, 1989). Where there is a tendency for the respondent to be indecisive on a question, “don’t know” or uncertain option is not appropriate (Rust & Golombok, 1989). Indeed, this type of ranking (i.e. a range of 1-4), has been widely used in infertility research in Western studies (e.g. Boulet, Lehert & Riphagen, 1988; Oddens, Tonkelaar & Nieuwenhuyse, 1999).

Indeed, it has also been documented that having a four option Likert measure is more practical for psychological assessment in Iran (Kaviani, 1989). It was also noticed by the present author that when questionnaires contained items such as “no opinion” or “don’t know” participants paid less attention to reading each item and adopted the “no opinion” more frequently as a means of fulfilling requirements of a lengthy questionnaire.

6.5 Step Four: Administering the Questionnaire to Iranian Population

6.5.1 Method

Participants

From an original sample of 300, a proportion of (65.6%) i.e. 197 married Iranians living in Tehran responded in which 83 were males and 114 females. The age range, in years, was from 18 to 65, and as the sample incorporated a variety of social and cultural backgrounds

it was felt that it was a representative sample. According to Kline (1993) the factors emerging from factor analysis are affected by the sample's characteristics. Although the sample needs to be homogeneous (Guildford, 1956), at the same time it should reflect population variations (Kline, 1993). Therefore, it was important to sample widely and representatively in order to ensure that sample reflects the true population.

Nevertheless for the issue of literacy it was crucial that they all be targeted at the offices and universities. All took part in the study voluntarily, with anonymity assured, and no information was provided which may have biased the results.

It must be acknowledged that the size of sample is important if reliable factors are to be obtained in a good analysis (Kline 1993). Although Guildford (1956) argues that 200 subjects is the minimum for a good analysis, Barrett and Kline (1981) showed that 100 subjects is sufficient as well. Of course all this depends on the size of items being investigated.

However, with regard to item to subject ratio, there are different opinions. For reasons of matrix algebra it is essential that there are more subjects than variables (Kline 1993). Although some preferred ratio of subjects to variables be two to one, Guildford (1956), Barrett and Kline (1981) and Arrindel and Ende (1985) claimed that this ratio was not important compared with the ratio of sample size to factors. Finally, it has been stated that stable factors required the sample to be twenty times larger than the number of factors (Kline 1993). See chapter 8 Discussion for arrangement of sample size in the present study.

Materials/procedure

The 128-item questionnaire (see Appendix 1 for a complete list of the questionnaire in English and in Farsi) was presented to the above sample printed on six A4 size pages. The respondents were asked to read each item carefully and express their opinion on a Likert type

scale ranging from “strongly agree”, “agree” to “disagree” and “strongly disagree”.

It was felt that it is more effective if the questionnaires was collected by the researcher from the subjects rather than using the posting system. This ensured debriefing and sincerity of responses.

6.6 Principle Component Analysis - test of validity

Principle Components Analysis was conducted on the collected data and a five-factor solution was identified from an overall figure of 40 factors with Eigenvalue greater than one (see Appendix 2).

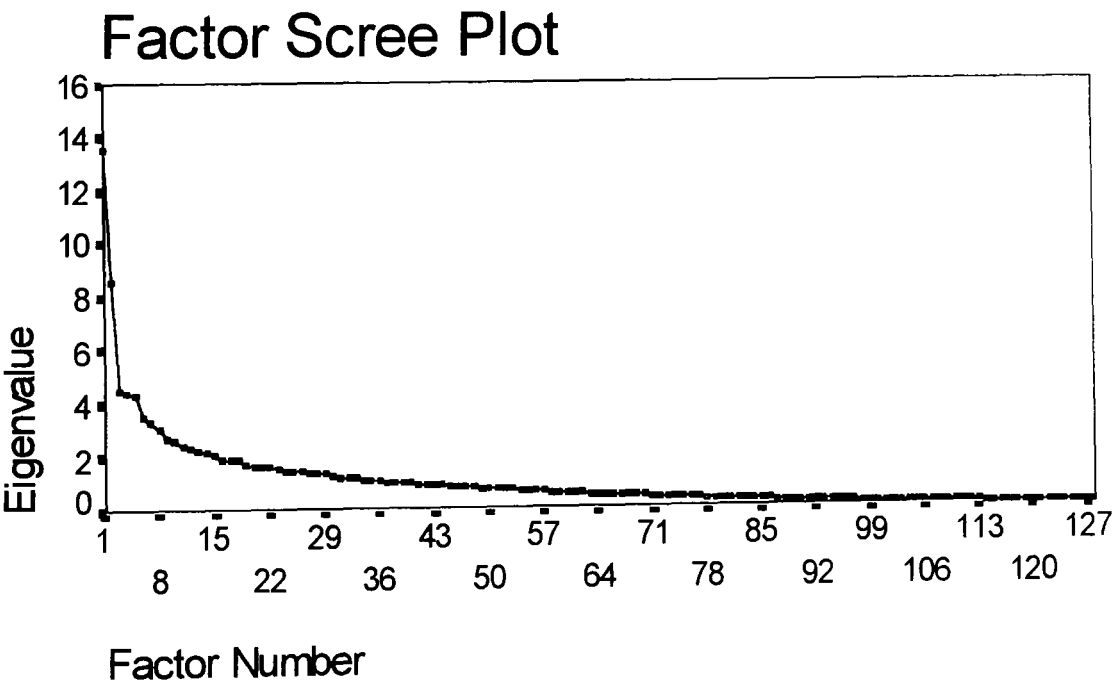
As can be seen in Table 6.6.1, of the five first factors, the first factor with Eigenvalue = 13.58, accounted for 10.6% of the variance and consisted of 32 items. The second factor with Eigenvalue = 8.61, accounted for 6.7% of the variance, and consisted of 24 items. The third factor with Eigenvalue = 4.47, accounted for 3.5% of the variance and consisted of 20 items. The fourth factor with Eigenvalue = 4.38, accounted for 3.4% of the variance and consisted of 19 items. The fifth factor with Eigenvalue = 4.28 accounted for 3.3% of the variance and consisted of 9 items.

Overall the cumulative percentage shows that 27.6% of the systematic covariance in the data is accounted for by these five factors. Although this leaves 72.4% of the variance remaining, Cattell’s Scree Test (Cattell, 1966), displayed in Figure 6.6.1, confirms that only these five factors are powerful enough to explain any of the covariance amongst the 128 items which form this Questionnaire. However, similar to these statistics, in a study by Bell, Bancroft and Philip (1985)- on a non-infertility related topic, the result of their factor analysis showed a three-factor solution, which indeed accounted for 30.9% of the total common variance.

Table 6.6.1 Initial Statistics for a Principle Components Analysis of the 128-item Questionnaire: Eigenvalue, Variances and Cumulative Variances for first five factors

| <u>Factor</u> | <u>Eigenvalue</u> | <u>Pct of. Var.</u> | <u>Cum. Pct.</u> |
|---------------|-------------------|---------------------|------------------|
| 1 | 13.58458 | 10.6 | 10.6 |
| 2 | 8.61186 | 6.7 | 17.3 |
| 3 | 4.47450 | 3.5 | 20.8 |
| 4 | 4.38268 | 3.4 | 24.3 |
| 5 | 4.28043 | 3.3 | 27.6 |

Figure 6.6.1 Factor Scree Plot of Eigenvalue for the 128-item Questionnaire



As can be seen in the Figure 6.6.1, the first 5 factors were clustered together indicating their significant value; therefore, it determined the number of factors to be selected (Cattell, 1966) for next rotational action.

However, the five-factor solution found was further investigated to determine for the actual item loadings for each factor. A Varimax-Rotation Principle Components with 13 iteration was carried out as the factors are considered independent and the findings of this analysis can be seen clearly in Table 6.6.2 with the factor loadings matrix for the five factors. Varimax rotation (Kaiser, 1958) was chosen because it is to select the factors which do not correlate strongly (orthogonal rotation). For internal correlations of five factors see Table 6.6.3.

Table 6.6.2 A factor loading matrix, using Varimax-Rotated Principle Components, for the 128 items Questionnaire

| Factor 1 | | Factor 2 | | Factor 3 | | Factor 4 | | Factor 5 | |
|----------|-------------|----------|-------------|----------|-------------|----------|-------------|----------|-------------|
| N. | Correlation | N. | Correlation | N. | Correlation | N. | Correlation | N. | Correlation |
| 96 | .60660 | 64 | .54810 | 89 | .60690 | 8 | -.67084 | 127 | .78520 |
| 95 | .56562 | 100 | .49888 | 102 | .58398 | 34 | -.61319 | 124 | .77697 |
| 19 | .55680 | 1 | .47845 | 90 | .58357 | 15 | -.60431 | 126 | .76968 |
| 104 | .54908 | 93 | .47767 | 98 | .56770 | 115 | -.54192 | 123 | .72893 |
| 97 | .54449 | 120 | .47655 | 99 | .48070 | 31 | -.51773 | 128 | .71172 |
| 44 | .53324 | 92 | .45693 | 47 | .47045 | 3 | -.50547 | 122 | .62623 |
| 112 | .52619 | 88 | .44051 | 50 | .44232 | 74 | .45019 | 35 | .39639 |
| 116 | .49144 | 24 | .4348 | 85 | .43045 | 38 | -.42950 | 25 | .34947 |
| 107 | .48152 | 91 | .43413 | 113 | .42861 | 94 | -.42108 | 48 | .32957 |
| 22 | .46592 | 119 | .42717 | 80 | .39952 | 62 | -.41833 | | |
| 30 | .46269 | 26 | .42140 | 40 | .39838 | 77 | -.41475 | | |
| 11 | .46032 | 41 | .41393 | 49 | .39691 | 12 | .40484 | | |
| 39 | .45184 | 52 | .41282 | 75 | .38878 | 6 | .39936 | | |
| 114 | .44982 | 60 | .40857 | 118 | .38141 | 117 | .39568 | | |
| 32 | .44908 | 105 | .40025 | 17 | .37681 | 13 | .39188 | | |
| 23 | .44509 | 14 | .39250 | 69 | .37061 | 42 | .36553 | | |
| 9 | .43937 | 68 | .38917 | 33 | .34773 | 56 | -.34688 | | |
| 27 | .41521 | 21 | .38562 | 72 | .33584 | 20 | -.33438 | | |
| 4 | .41291 | 86 | .37899 | 106 | .30345 | 51 | .31808 | | |
| 111 | .40301 | 110 | .37753 | 59 | .30248 | | | | |
| 109 | .39995 | 63 | .36892 | | | | | | |
| 46 | .39547 | 83 | .36482 | | | | | | |
| 66 | .39340 | 61 | .35328 | | | | | | |
| 5 | .38789 | 28 | .34164 | | | | | | |
| 67 | .38472 | | | | | | | | |
| 43 | .35041 | | | | | | | | |
| 10 | .34096 | | | | | | | | |
| 54 | .33559 | | | | | | | | |
| 45 | .32834 | | | | | | | | |
| 53 | .31902 | | | | | | | | |
| 121 | -.31141 | | | | | | | | |
| 58 | .30034 | | | | | | | | |

Table 6.6.3 Factor Correlation Matrix for 128-item Questionnaire with 5 factors showing the internal correlation of the five factors (factors yet to be labelled, see section 6.6.1)

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Factor 5 |
|-----------------|----------|----------|----------|----------|----------|
| Factor 1 | 1.00000 | | | | |
| Factor 2 | .01334 | 1.00000 | | | |
| Factor 3 | -.18776 | .03401 | 1.00000 | | |
| Factor 4 | -.04138 | -.19954 | -.01863 | 1.00000 | |
| Factor 5 | .18980 | .06149 | -.14240 | -.15293 | 1.00000 |

6.6.1 Labelling the Extracted Factors

After a careful review of the content of the original variables, each of five factors was given a label which reflects items in which the individuals rated the nature related to that factor. By referring to the 128-item Questionnaire (see Appendix 1) inference was made from the relevant items to determine the nature of the five factors for measuring the individuals’ attitudes and behaviour. For each of the factors examples of items are provided and the interpretations made stated:

Factor one with Eigenvalue of 13.58, accounted for 10.6% of the variance and consisted of 32 items with item loading ranging from .3 to .6. Generally, it has been accepted that in practice the first factor usually has moderate loadings, ranging from around .3 to .7 (Kline 1993). The items defining this factor, such as N.9. “I certainly feel useless at times” ; N.11. “I feel weak all over much of the time”; N.19. “Most of the time I wish I were dead”, suggest that factor one represents anxiety and depression, thus labelled “Psychological Distress”.

Factor two with Eigenvalue of 8.61, accounted for 6.7% of the variance and consisted of 24 items with item loading ranging from .3 to .5. The items for factor two for example N.63. “I like plenty of excitement going on around me”; N.24. “I love to go to gatherings/parties”; N.64. “I am rather lively”; N.28. “My worries seem to disappear when I get in a crowd of lively friends”, are characteristic of the individual’s social extroversion, thus labelled “Social Extroversion”.

Factor three with Eigenvalue of 4.47, accounted for 3.5% of the variance and consisted of 20 items with item loading ranging from .3 to .6. The items in factor three stated for example: N.89. “Children are the joy of life” ; N.98. “My partner is less interested in having sex”; N.118. “As time goes by couples become less sexually attracted to one another”, represent family and marital relationship, thus labelled “Marital Satisfaction”.

Factor four with Eigenvalue of 4.38, accounted for 3.4% of the variance and consisted of 19 items with item loading ranging from .3 to .6. The items defining factor four, for example: N.15. “Most doctors are more interested in their incomes than in making sure everyone receives adequate medical care”; N.3. “If even a person is feeling good, he/she should get a general physical examination every year”; N.62. “When I recover from an illness, it is usually because other people have been taking good care of me”, are related to attitudes towards modern medicine and medical professions, thus labelled “Attitudes Towards Modern Medicine”.

Factor five with Eigenvalue of 4.28, accounted for 3.3% of the variance and consisted of 9 items with item loading ranging from .3 to .7. The items defining factor five, such as N.122. ‘As an adult, I worship regularly.’ N.123. “I follow most religious rules”; N.124. “Religion tends to dominate my life”, are representative of attitudes towards religion thus labelled “Religious Belief”.

6.6.2 Reliability Analysis

To investigate the internal reliability of the formulated Questionnaire (104 items remained after factor analysis), Cronbach's Alpha (Cronbach, 1951) was calculated for each of the five factors. The results of this analysis are summarised below.

Factor one "Psychological Distress"

As shown in Appendix 3, with 4 cycles of Cronbach's Alpha applied to data (with an initial alpha of .8822 and final solution alpha .8928), it resulted in removing the following 4 items: N.121. "I dwell on problems"; N.67. "I am often troubled with guilty feelings"; N.45. "If I get upset I'm likely to get a headache"; N.10. "What others think of me does not bother me". As could be seen from careful reading of the items they may not be directly representative of psychological distress. Cronbach's Alpha of .8928 indicates that approximately 89% of the remaining 28 items listed are correlating with each other. High score on these items indicates higher distress level.

Factor two "Social Extroversion"

As shown in Appendix 3, no single item in all 24 items relating to social extroversion needed deleting for increasing the initial Alpha of .8241. Therefore they all remained as listed. Cronbach's Alpha of .8241 indicates that approximately 82% of the items listed are correlating with each other. Low score indicates negative social extroversion (social withdrawal).

Factor three "Marital Satisfaction"

As shown in Appendix 3, with 4 cycles of Cronbach's Alpha applied to data (with an

initial alpha of .8119 and final solution alpha .8176), it resulted in removing the following 4 items: N.106. "When I make a mistake, I do not come down too hard on myself"; N.59. "Whenever I don't feel well, I consult a medically trained professional"; N.33. "I am usually calm and not easily upset"; N.72. "There are people who care about what happens to me". As could be seen from careful reading of the items they may not be directly representative of marital satisfaction. Cronbach's Alpha of .8176 indicates that approximately 82% of the remaining 16 items listed are correlating with each other. Higher scores on these items indicate negative/poor marital (sexual) satisfaction.

Factor four "Attitudes Towards Modern Medicine"

As shown in Appendix 3, with 8 cycles of Cronbach's Alpha applied to data (with an initial alpha of .4720 and final solution alpha .7971), it resulted in removing the following 8 items: N.117. "I have a much harder time than others do when I do anything"; N.74. "I work long hours even though my job doesn't require this"; N.56. "Becoming a success is a matter of hard work, luck has little to do with it"; N.51. "Most married couples don't show much affection for each other"; N.42. "Much of the trouble I'm having is due to bad luck"; N. 6. "I have not lived the right kind of life"; N.12. "There is very little love and companionship in my family as compared to other families" N.13. "Some of my family members have habits that bother and annoy me very much."

As could be seen from careful reading of the items they may not be directly representative of trust in medicine. Cronbach's Alpha of .7971 indicates that approximately 79% of the remaining 11 items listed are correlating with each other. High scores on these items indicate negative opinion and no trust towards medicine.

Factor five “Attitudes towards religion”

As shown in Appendix 3, with 3 cycles of Cronbach's Alpha applied to data (with an initial alpha of .8524 and final solution alpha .9024), it resulted in removing the following 3 items: N.48. “The only place where I feel relaxed is in my own home”; N.35. “Ghosts or spirits can influence people for good or bad”; N.25. “I enjoy children's company”.

As could be seen from careful reading of the above items they may not be directly representative of attitudes towards religion. Cronbach's Alpha of .9024 indicates that approximately 90% of the remaining 6 items listed are correlating with each other. High scores on these items indicate strong believe in religion.

6.6.3 Final stage of the validated Questionnaire

As a result of factor analysis and reliability test, a Questionnaire with 85 items has been formulated. This 85-item Questionnaire was printed clearly on six A4 size pages. The respondents were asked to read each item carefully and express their opinion on a Likert type scale ranging from “strongly agree”, “agree” to “disagree” and “strongly disagree”. See Appendix 4 for a complete list of the questionnaire in English and in Farsi.

6.7 Administration of the Questionnaire to Patients and Control group

The norms group's scores were obtained from the initial sample scored on original 128-item questionnaire after being validated in phase one. At the same time the patients group and the control group were targeted in the clinics and the 85-item Questionnaire administered to.

6.7.1 Method

Participants: The Patient group

The research criteria for choosing the infertility patients were as follows: 1) patients who were advised by their General Practitioner to stop using contraception for a year, and 2)

patients who were candidates for having IVF treatment.

As was discussed in chapter four, the plan was to assess the infertility patients from the very beginning of their infertility experience. Therefore, it was thought that if the research included those infertility patients who have had infertility investigations or infertility treatment before, this would not meet the criteria of current research. Also choosing IVF patients was because of assessing the experience of a treatment which involved rather invasive procedure compared to non-invasive treatment like hormonal therapy by injections or taking tablets.

At the start 130 couples who were referred to the infertility clinic by their General Practitioner for infertility investigations and treatment, were targeted. Over a period of 2 years of research investigation, the number of patients for research investigation decreased to 37 couples (28.46%). This was mainly because of patients' drop out due to changing the clinic; not wanting to continue with current research investigation or because they did not fit into the research criteria (for example, they were to have hormonal therapy by injections or tablets). The 37 infertile couples were all first time referrals to the clinic and were having their first experience of IVF treatment. Mean age of women was 29.4 with $SD = 5.9$ and mean age of men was 34.4 with $SD = 5.7$.

Out of 37 couples, 14 couples had male cause infertility (the cause of infertility was generally poor quality of sperm cells), 18 couples had female cause infertility (the causes of infertility were generally due to badly functioning of fallopian tubes or endometriosis) and 5 couples had both male and female infertility.

Participants: The Control group

For comparison, 59 couples who matched with the patients group in terms of their age, social class, education and occupation were targeted. This group were couples who visited the

gynaecology clinic mainly for contraception purposes, excessive bleeding during period, and also excessive abdominal pain during her menstrual cycle. Of 59 couples, 40 had 1 to 2 children, and the rest did not have any offspring and were not planning to have any. All had non-infertility related problems and were accompanied by their husbands. All of them had to attend the clinic more than twice for their investigations and treatments. However, only 10 out of 59 couples remained in all 3 stages of the present research. Their mean age for women was 30.8 with SD = 8.4 and mean age for men was 34.3 with SD = 8.16.

Materials

The questionnaire validated in phase one (see Appendix 4 for a complete list) was given to the recruited patients and the control group.

Procedure

Three male and three female medical students assisted the author in conducting and administering the 85-item Questionnaire and in collecting demographic information i.e. age, cause of infertility, education, occupation and religion. The questionnaire was administered in clinics in Tehran at three stages: the “before treatment”; “during treatment” (IVF) and after at least one treatment cycle. The control group were given the 85-item questionnaire during three different routine visits to the clinic (at least 3 weeks gap between each administration).

Indeed, the “before treatment” stage applied to the time where all the patients were referred to the infertility clinic by their GPs. In this period, the patients were going through the consultation with the doctor and were given information about their medical condition, nature of investigations, procedures and possible diagnosis and type of treatment. Assessment at this stage provided baseline “pre-diagnosis” measure for the purpose of comparison.

The “during treatment” period applied to the time where the diagnosis was made and the IVF

treatment had started. In particular, it was the time when the patients were assessed 24 hours before egg collection in which they had already administered the last injection called the Profasi (HCG). In fact, this time is the most appropriate because “during treatment” stage patients had the main part of the treatment (i.e. using nasal spray, injection and ultrasound). The “after treatment” period applied to the time where one week had passed from the time when the result of pregnancy was known. This was purposely chosen because at the time of receiving the negative result, patients are expected to be in a state of shock status. Therefore, they would not be willing to respond to the questionnaire. Patients normally return to the clinic a week after the last treatment for a follow-up.

The responses given to the 85-item Questionnaire are subjected to qualitative and quantitative analyses which is explained in chapter 7.

7 Chapter 7: Results

7.1 Psychological Distress, infertility and infertility treatment

7.1.1 Preface

As argued in chapter two, previous studies have generally shown that there is significant psychological distress amongst infertile patients (e.g. Daniluk et al., 1987; McEwan et al., 1987; Kedem et al., 1990; Abbey et al., 1991; Berg & Wilson, 1991; Wright et al., 1991; Atwood & Dobkin, 1992; Monach, 1993; Becker, 1994; Pengelly et al., 1995; Morrow et al., 1995; Band et al., 1998). However, very few have actually made any attempts to compare the psychological distress level of patients with norms (Berg & Wilson, 1990, 1991; Edelman et al., 1994; Beaurepaire et al., 1994) and in particular with a comparable group of clinical patients who are not infertile (Abbey et al., 1991; Domar et al., 1992a,b; Hirsch & Hirsch, 1995). Thus it is not clear as to whether the general level of psychological distress of patients is necessarily greater than what one would expect from the general population or a comparable clinical group. Moreover, it is not clear whether undergoing treatment of infertility aggravates the psychological distress of infertile patients (see e.g. Leiblum et al., 1987; Baram et al., 1988; Beaurepaire et al., 1994, for studies supporting the view that undergoing treatment aggravates the psychological distress of the patients and see e.g. Daniluk et al., 1987; Daniluk, 1988; Cook et al., 1989; Connolly et al., 1992, for those suggesting that there is no effect). Thus the main analyses reported below are the comparison of psychological distress scores of patients with those of a clinically comparable group and the norms before any treatment for infertility had begun. Moreover, the psychological distress scores of patients and the clinically control group taken at three time phases are compared to the norms to examine whether a) the psychological levels distress levels of patients are different from norms and clinical group and b) if undergoing treatment has an impact on the scores.

7.1.2 Psychological Distress level of 3 groups: the patients, the control and the norms

As can be seen in Table 7.1.1, the patients are more psychologically distressed than the norms. Formal analysis of the data using a one way independent groups ANOVA was found to be significant $F(2, 288) = 12.53, p < .0001$.

Table 7.1.1 Mean Psychological Distress scores together with their corresponding standard deviations (SD) for the patients and the control at the first assessment in comparison to the norms

| | Mean | SD |
|----------------|------|-----|
| Patients group | 2.64 | .69 |
| Control group | 2.42 | .44 |
| Norm Group | 2.33 | .32 |

(Higher scores indicated higher Distress Level.)

Post hoc comparison of the means showed that the main significant difference is between the patients and the norms, whilst the patients did not differ significantly from the control (see Table 7.1.2).

Table 7.1.2 Post hoc comparison of the means using Fisher’s PLSD, Scheffe’s F-test and Dunnett’s t test between the patients and the control at the first assessment in comparison to the norms

| Comparison: | Mean Diff.: | Fisher PLSD: | ScheffeF-test: | Dunnett t: |
|----------------------|-------------|--------------|----------------|------------|
| Patients vs. Control | .22 | .22 | 1.90 | 1.95 |
| Patients vs. Norms | .30 | .12* | 12.53* | 5.007 |
| Control vs. Norms | .08 | .20 | .32 | .81 |

* $p < .05$

7.1.3 Psychological Distress level and Time of assessment

In a follow up assessment the mean psychological distress scores of the patients and the control taken at three time phases was again compared with the norms. The mean psychological distress scores and their corresponding standard deviations (SD) are shown in Table 7.1.3.

Table 7.1.3 Mean Psychological Distress scores together with their corresponding standard deviations (SD) for the patients and the control (at all three time phases) in comparison to the norms

| | Mean | SD |
|----------------|------|-----|
| Patients group | 2.60 | .68 |
| Control group | 2.37 | .55 |
| Norms | 2.33 | .32 |

(Higher scores indicated higher Distress Level.)

As can be seen in the above Table, the mean psychological distress scores of the patients are still remaining higher than the norms and the control at all three time phases. Formal analysis of the data using one way independent groups ANOVA confirmed this claim with $F(2, 476) = 13.3, p < .0001$. Post hoc comparison of the means showed significant differences at $p < .05$ level between the patients and the control group and the patient group and the norms (see Table 7.1.4).

Table 7.1.4 Post hoc comparison of the means using Fisher’s PLSD, Scheffe’s F-test and Dunnett’s t test between the patients and the control (at all three time phases) in comparison to the norms

| Comparison: | Mean Diff.: | Fisher PLSD: | ScheffeF-test: | Dunnett t: |
|----------------------|-------------|--------------|----------------|------------|
| Patients vs. Control | .23 | .15 * | 4.17 * | 2.88 |
| Patients vs. Norms | .26 | .10 * | 12.39* | 4.97 |
| Control vs. Norms | .03 | .15 | .10 | .45 |

* p < .05

These results thus seem to suggest that the patients are significantly distressed even before any treatment is initiated. Whilst this level of distress is comparable to the control group at initial stage it soon exceeds the norms and the control group. This is similar to the report by Freeman et al. (1985) in which almost half of the infertile couples waiting for admission for the infertility treatment programme appeared to be clinically depressed compared to the published norms. Also in a study by Link and Darling (1986), responses of 43 couples on levels of life satisfaction which was compared to published norms, indicated clinically significant levels of nonpsychotic depression. Daniluk (1988) also found that patients (men and women) are more distressed than norms at the initial stage of the assessment, before any treatment began.

As has been argued in chapter three, many aspects of the treatment may be causing psychological distress to the patients, such as physical pain, fear of treatment, drug side effects and changes of life patterns. Therefore, this is not very surprising that the levels of distress in patients increase as they undergo treatment. This is also reported in many other Western studies. For example, in a study by Benazon et al. (1992) psychological distress of 165 infertile couples was assessed at different stages of treatment, compared to published norms. There was a significant increase in distress levels as treatment progressed. However, there are studies

which have found results contrary to the above finding in which the infertile couples' distress level does not increase as the treatment progresses (Daniluk et al., 1987; Connolly et al., 1992). In fact, it may be appropriate to explain the discrepancy in the light of methodological differences. For example, in both the above studies Daniluk et al. (1987) and Connolly et al. (1992) there was no control group and also, the studies used standardised Questionnaires such as EPQ and Symptom Check List.

7.1.4 Psychological Distress level for men and women

However it should be noted that because most of previous Western studies have concentrated on one gender only, in a follow up analysis the data for men and women were subjected to separate analysis.

Table 7.1.5 Mean Psychological Distress scores together with their corresponding standard deviations (SD) for the patients and the control at first assessment in comparison to the norms (men only)

| | Mean | SD |
|----------------|------|-----|
| Patients group | 2.39 | .69 |
| Control group | 2.53 | .53 |
| Norms | 2.23 | .27 |

(Higher scores indicated higher Distress Level.)

As can be seen in Table 7.1.5, psychological distress level of men in the control differs from psychological distress level of men in the norms. The results of one way ANOVA showed a significant main effect with $F(2, 134) = 3.2, P < .04$. Post hoc comparison of the means showed significant differences at $p < .05$ level between the control and the norms (see Table 7.1.6).

Table 7.1.6 Post hoc comparison of the means using Fisher’s PLSD, Scheffe’s F-test and Dunnett’s t test between the patients and the control at first assessment in comparison to the norms (men only)

| Comparison: | Mean Diff.: | Fisher PLSD: | ScheffeF-test: | Dunnett t: |
|----------------------|-------------|--------------|----------------|------------|
| Patients vs. Control | -.13 | .31 | .37 | .86 |
| Patients vs. Norms | .16 | .17 | 1.73 | 1.86 |
| Control vs. Norms | .29 | .29* | 2.02 | 2.01 |

* p < .05

The analysis of the data on men for all three time phases showed that psychological distress level of men patients remained stable as the treatment progresses (see Table 7.1.7). Formal analysis of the data using a one way independent groups ANOVA was found to be significant: $F(2, 228) = 3.67, p < .02$.

Post hoc comparison of the means showed significant differences at $p < .05$ level between the control and the norms (see Table 7.1.8).

Table 7.1.7 Mean Psychological Distress scores together with their corresponding standard deviations (SD) for the patients and the control at all three time phases in comparison to the norms (men only)

| | Mean | SD |
|----------------|------|-----|
| Patients group | 2.37 | .65 |
| Control group | 2.51 | .56 |
| Norms | 2.23 | .27 |

(Higher scores indicated higher Distress Level.)

Table 7.1.8 Post hoc comparison of the means using Fisher’s PLSD, Scheffe’s F-test and Dunnett’s t test between the patients and the control at all three time phases in comparison to the norms (men only)

Comparison: **Mean Diff.:** **Fisher PLSD:** **Scheffe F-test:** **Dunnett t:**

| | | | | |
|-----------------------------|------|------|-------|------|
| Patients vs. Control | -.13 | .21 | .82 | 1.28 |
| Patients vs. Norms | .13 | .14 | 1.75 | 1.87 |
| Control vs. Norms | .27 | .21* | 3.16* | 2.51 |

* p < .05

Connolly et al. (1992) and Daniluk (1988) in their studies reported no evidence that psychological morbidity changes substantially during testing and treatment. Indeed, Connolly at al. (1992) reported that the level of psychological distress remained stable throughout the treatment procedures except when there is male infertility.

The same one way ANOVA was conducted for the data on women. The mean and standard deviation (SD) can be seen in Table 7.1.9. As can be seen in the Table, psychological distress level of the infertile women is higher than the women in the control and the norms. Formal analysis of the data using one way independent groups ANOVA confirmed this claim with $F(2, 151) = 19.3$ $p < .0001$.

Table 7.1.9 Mean Psychological Distress scores together with their corresponding standard deviations (SD) for the patients and the control at first assessment in comparison to the norms (women only)

| | Mean | SD |
|----------------|------|------|
| Patients group | 2.89 | 0.60 |
| Control group | 2.31 | .32 |
| Norms | 2.42 | .33 |

(Higher scores indicated higher Distress Level.)

Post hoc comparison of the means showed significant differences at $p < .05$ level between the patients and the control, and the patients and the norms (see Table 7.1.10).

Table 7.1.10 Post hoc comparison of the means using Fisher’s PLSD, Scheffe’s F-test and Dunnett’s t test between the patients and the control at first assessment in comparison to the norms (women only)

| Comparison: | Mean Diff.: | Fisher PLSD: | Scheffe F-test: | Dunnett t: |
|----------------------|-------------|--------------|-----------------|------------|
| Patients vs. Control | .58 | .29* | 7.77* | 3.94 |
| Patients vs. Norms | .47 | .15* | 17.84* | 5.97 |
| Control vs. Norms | -.11 | .27 | .32 | .80 |

* $p < .05$

The above results on women showing high level of psychological distress compared to the control and the norms is further supported by the studies in the West. A study by Visser et al. (1994) reported that at the initial assessment (prior to their first IVF treatment) women’s scores on state anxiety were higher than the norms. This is again similar to Slade et al.’s (1997) study results in which women were more anxious at the initial stage than the norms. Another study by Reading, Chang and Kerin (1989) on 37 women undergoing IVF treatment

showed that at the beginning of the IVF treatment about 20% of the women had clinical signs of anxiety and depression.

Table 7.1.11 Mean Psychological Distress scores together with their corresponding standard deviations (SD) for the patients and the control at all three time phases in comparison to the norms (women only)

| | Mean | SD |
|----------------|------|-----|
| Patients group | 2.83 | .64 |
| Control group | 2.23 | .52 |
| Norms | 2.42 | .33 |

(Higher scores indicated higher Distress Level.)

Further separate analysis of the scores of women for all three phases were conducted. As can be seen in Table 7.1.11, psychological distress level of the infertile women remains higher than the control and the norms as the treatment progresses. Formal analysis of the data using one way independent groups ANOVA confirmed this claim with $F(2, 245) = 24.87, p < .0001$. Post hoc comparison of the means showed significant differences at $p < .05$ level between the patients and the control, and the patients and the norms (see Table 7.1.12).

Table 7.1.12 Post hoc comparison of the means using Fisher’s PLSD, Scheffe’s F-test and Dunnett’s t test between the patients and the control at all three time phases in comparison to the norms (women only)

| Comparison: | Mean Diff.: | Fisher PLSD: | Scheffe F-test: | Dunnett t: |
|----------------------|-------------|--------------|-----------------|------------|
| Patients vs. Control | .59 | .21* | 15.78* | 5.61 |
| Patients vs. Norms | .41 | .138* | 17.12* | 5.85 |
| Control vs. Norms | -.18 | .21 | 1.54 | 1.75 |

* $p < .05$

This finding is similar to some of the research findings in the West. For example, Reading et al. (1989) reported that anxiety and depression level was significantly high at the beginning of the IVF treatment, but also the distress level increased significantly over time. In Reading et al.'s (1989) study the patients were compared to a control group and the norms. In another study by Merari et al. (1996), on women's psychological reactions to infertility treatment, it was shown that distress levels were higher than norms at all stages of the treatment.

7.1.5 Time of Assessment and Gender

Whilst the patient group as a whole seem to be more distressed than the norms, it is important to find out if there is a difference between men and women in their level of stress at the three time phases.

A 2 (gender) by 3 (time of assessment) factorial ANOVA was conducted on the data on the Psychological distress and interesting to note is that as treatment progressed it was the women's psychological distress scores that exceeded both the norms and the control group. The means and corresponding standard deviations (SD) are shown in Table 7.1.13.

Table 7.1.13 Mean Psychological Distress scores together with their corresponding standard deviations (SD) as per condition in the present analysis

| | Before Treatment | | During Treatment | | After Treatment | |
|--------|------------------|-----|------------------|-----|-----------------|-----|
| | Mean | SD | Mean | SD | Mean | SD |
| Female | 2.893 | .60 | 2.547 | .63 | 3.051 | .60 |
| Male | 2.395 | .69 | 2.109 | .56 | 2.613 | .60 |

As can be seen from the above Table, women are generally more distressed than men. Moreover, there seems to be an increase in the level of stress between initial assessment and

final assessment. Formal analysis of the data showed main effects for gender with $F(1, 72) = 14.9, p < .0001$ and time of assessment $F(2, 144) = 27.5, p < .0001$. There was no significant interaction.

Post hoc comparison of the means showed significant differences at $p < .05$ level between the “before” and “during”: $t(73) = 5.4, p < .0001$, and “before” and “after”: $t(73) = 2.3, p < .02$, and “during” and “after”: $t(73) = 7.3, p < .0001$, for all patients.

Further analysis were conducted separately for men and women. Post hoc comparison of the means showed significant differences at $p < .05$ level between the “before” and “during”: $t(36) = 4.1, p < .0001$, and “during” and “after”: $t(36) = -4.8, p < .0001$, for female patients.

For the male patients, post hoc comparison of the means showed exactly the same pattern, a significant difference between the “before” and “during”: $t(36) = 3.4, p < .001$, and “during” and “after”: $t(36) = -5.6, p < .0001$.

In summary the general pattern seems to suggest that both men’s distress level and women’s distress level goes down as times passes by but increases at the end of treatment. However, overall women are more stressed than men. This could be explained by the fact that Iranian men, more than Iranian women, are engaged more in everyday activity struggling with family responsibility, finance, and job competition and therefore find infertility not fundamentally more stressful than these problems.

This is in line with the finding by Andrews et al. (1992) in which as time passed by women in infertile group became more stressed whilst men did not find infertility significantly different to other life problems.

Similarly Slade et al. (1997) showed that as time passes and the treatment progresses, women’s distress level remains high compared to their partners as well as the norms.

7.1.6 What are the Key Predicting factors in Psychological Distress of infertile patients?

Previous research has shown that factors such as gender (Collins et al., 1992; Beaurepaire et al., 1994; Laffont & Edelmann, 1994), age (Neugarten, 1979; Morrow et al., 1995; Merari et al., 1996; Band et al., 1998), marital satisfaction (Raval et al., 1987; Pepe & Byrne, 1991), religion (Greil, 1991; Inhorn, 1996; Baluch et al., 1998), cause of infertility (Connolly et al., 1992; Baluch et al., 1998), and even attitudes toward modern medicine (Morrow et al., 1995; Van Balen et al., 1997; Van Balen & Vendurmen, 1999) may be correlating with psychological distress of infertile patients.

In order to establish which variable is the main contributing factor to psychological distress of Iranian patients the following variables were examined using a standard multiple regression analysis: namely: age, marital satisfaction, attitudes towards modern medicine, religious beliefs, cause of infertility, and gender.

Hypotheses

Based on previous studies one may hypothesise that gender would be the most significant predicting variable with females showing significantly more distress than men. However, the extend and degree of significance of factors such as marital satisfaction, attitudes towards modern medicine, religious belief, and cause of infertility has been a debatable with no consistent pattern. Of the above factors religious belief may be argued to show a significant effect in relation to Persian patients. Indeed one may argue that religion would show greatest significance as a predicting variable on psychological distress.

Thus the following will summarise what analyses will be performed on the data on psychological distress to untangle the issue of factors contributing to psychological distress. Firstly, a Standard Multiple Regression on Psychological distress incorporating all the above

variables to find out which factor are the main contributing variable. This is followed by a path analysis which will be conducted to examine the pattern of relationships between the key contributing variables. The final part of this section of the data analysis will incorporate separate analysis of each significant factor in relation to psychological distress.

Table 7.1.14 Standard Multiple Regression of Age, Marital Satisfaction, Attitudes Towards Modern Medicine, Religious Beliefs, Cause of Infertility, and Gender on Psychological Distress

| Variable | Coefficient | Std. Err. | Std. Coeff. | t-Value | Probability |
|----------------------------|-------------|-----------|-------------|---------|-------------|
| INTERCEPT | -.29 | | | | |
| Age | -.007 | .01 | -.07 | .66 | .51 |
| Gender | .36 | .12 | .32 | 2.86 | .005 |
| Cause | .03 | .08 | .03 | .36 | .71 |
| Attitudes Towards Religion | .22 | .12 | .19 | 1.82 | .07 |
| Attitudes Towards Medicine | .38 | .19 | .20 | 2.01 | .04 |
| Marital Satisfaction | .39 | .22 | .19 | 1.78 | .07 |

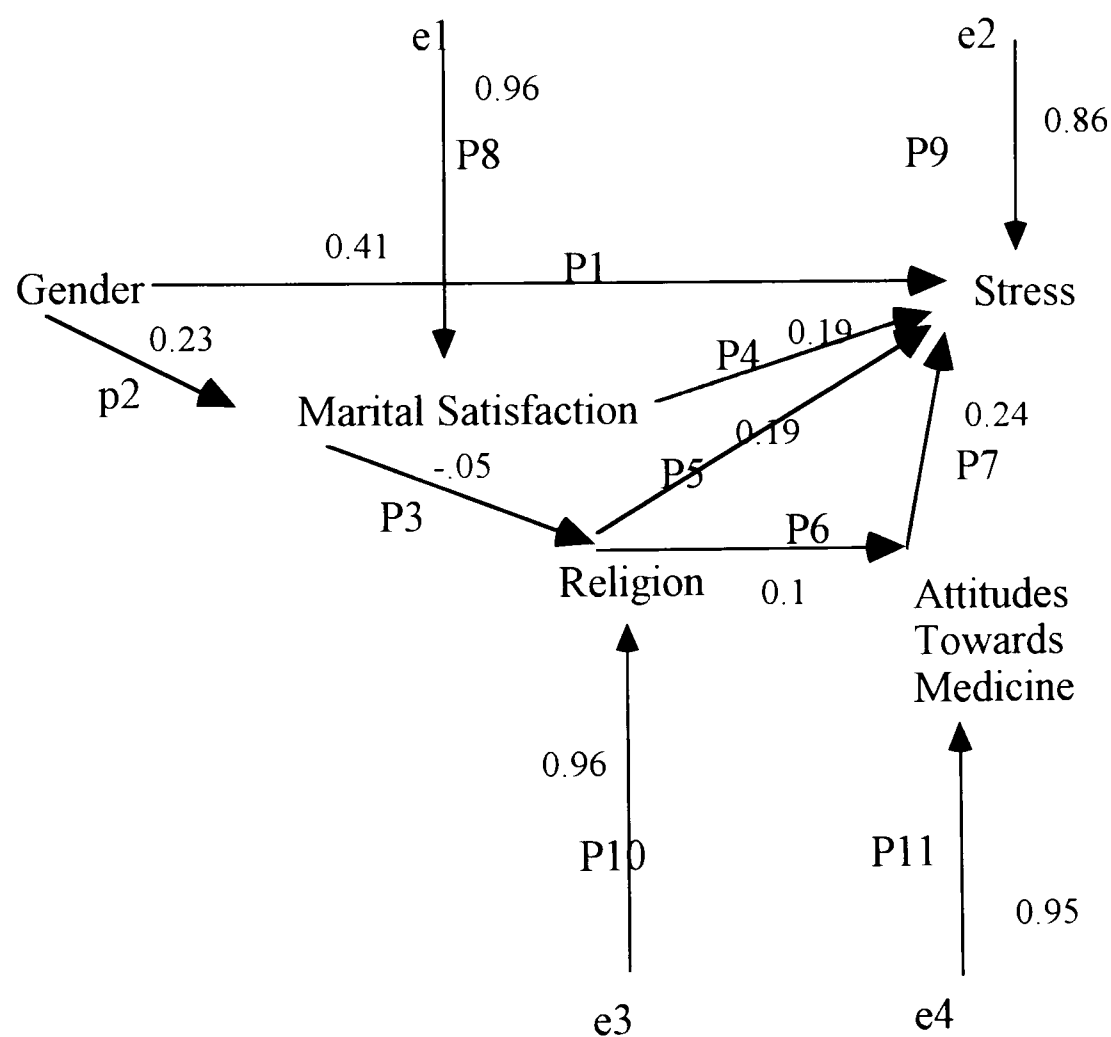
$R^2 = .31$, Adjusted $R^2 = .24$, $p < .0003$.

The results showed that the multiple correlation R for the regression was significantly different from zero, $F(6, 73) = 5.02$, $p < .0003$. Four of the above variables contributed significantly to the prediction of psychological distress scores, namely attitudes towards modern medicine, and most significantly gender with ($\beta = .36$, $p < .005$). See Table 7.1.14 for summary Beta coefficient table and significance level.

7.1.6.1 Path Analysis

The nature of relationship between gender, marital satisfaction, attitudes towards modern medicine and religion on psychological distress has been explored by the path coefficients and error (residual) coefficients (see Figure 7.1.6.1 for actual values).

Figure 7.1.6.1 Path diagram together with actual values of path coefficients and the Residual path coefficients of Gender, Marital Satisfaction, Religion, and Attitudes towards Modern Medicine on Psychological Distress



As can be seen in the above diagram, Gender is the main predictor of the Psychological distress with the total effect (0.36) being very close to the value of zero-order correlation of 0.41.

In view of significance of gender as a contributing variable to psychological distress in section 7.1.6 multiple regressions analysis has been performed for male and female data separately in order to explain further the nature of contributing variables in psychological distress of each gender.

What follows in the sections bellow is a further description of the nature of relationship of each of the variables found to be significant in the multiple regression analysis.

7.1.6.1.1 Psychological Distress and Marital Satisfaction

Further analysis of the data showed a significant correlation with psychological distress with $R_s = .23$, $p < .04$, suggesting that the more psychological distress, the more marital dissatisfaction experienced by the couples (see Table 7.1.15).

Table 7.1.15 Table showing the results of Spearman’s Correlation Coefficient between the Psychological Distress scores and Marital Satisfaction with corrections made for ties for the patients at all three time phases

| | | |
|------------------------|------|-----------|
| Rho | .21 | |
| Z | 1.97 | $p < .04$ |
| Rho corrected for ties | .23 | |
| Z corrected for ties | 1.96 | $p < .04$ |

The stress of infertility causing marital dissatisfaction has been reported in other Western studies (for example, see, Valentine, 1986; Abbey et al., 1991; Slade et al., 1992; Benazon et al., 1992; Zoldbrod, 1993). In these studies, it has been argued that factors such as lack of joy in sex have played a significant role in their psychological distress.

However, a number of issues need to be further explored a) if the correlation reported between

marital relationship and psychological distress reported here is specific to infertile patients only or applicable to the general normal population (see Table 7.1.16), b) to examine if there are changes in marital satisfaction for the patient group at different stages of infertility treatment in order to establish if undergoing treatment had significance on the marital satisfaction.

Table 7.1.16 Table showing the results of Spearman’s Correlation Coefficient between the Psychological Distress scores and Marital Satisfaction with corrections made for ties for the norms

| | | |
|------------------------|------|-----------|
| Rho | .40 | |
| Z | 5.69 | p < .0001 |
| Rho corrected for ties | .40 | |
| Z corrected for ties | 5.65 | p < .0001 |

As can be seen in the above Table, correlational analysis shows that the finding on the patients is true for the norms indicating that in general higher level of psychological distress is associated with lower marital satisfaction.

A one way repeated groups ANOVA on the data between time of assessment (before, during and after treatment) showed a significant effect with $F(1, 146) = 27.4, p < .0001$. Mean scores together with their corresponding standard deviations (SD) are shown in Table 7.1.17.

Table 7.1.17 Mean Marital Satisfaction scores together with their corresponding standard deviations (SD) for the patients at three different time phases

| | Mean | SD |
|-------------------------|------|-----|
| Before Treatment | 2.04 | .37 |
| During Treatment | 2.15 | .39 |
| After Treatment | 2.44 | .40 |

(Higher scores indicated Lower Marital Satisfaction.)

As can be seen in the above Table, marital satisfaction declines as the treatment progresses. Patients have the lowest marital satisfaction at the third stage of the assessment (after treatment).

Post hoc comparison of the means showed significant differences at $p < .05$ level between the “before” and “after”: $t(73) = 4.9, p < .0001$, and “during” and “after”: $t(73) = -2.2, p < .02$.

The results show that as the treatment progresses there is evidence of decline in marital satisfaction. This has been highly supported in the Western literature (Raval et al., 1987; Daniluk et al., 1987) with such patient comments as “there are three people in the bed when they are making love” (Matthews & Matthews, 1986; Pines, 1990; Becker & Nachtigall, 1991) “feeling that medical professions are vital figures in their very private relationship” (De Vires, Degani, Eibschitz, Oettinger, Zilberman & Sharf, 1984; Zoldbrod, 1988; Becker, 1994). Also for men masturbating in the toilet in the clinic while others are waiting for their turn, has often been a cause of embarrassment and distress (Blenner, 1991; Beaurepaire et al., 1994).

Although it was previously argued (chapter 5) that sexual behaviour and marital relationship may be more mechanistic amongst Iranian patients, and one would have expected that such intrusions as a result of treatment may not have a significant effect on their relationship,

nevertheless the result refute this claim. It may thus be suggested that undergoing treatment has a significant impact on marital and sexual relationship for both Iranian and Western culture.

7.1.6.1.2 Psychological Distress and Attitudes towards modern medicine

In relation to attitudes towards modern medicine using Spearman's correlation coefficient correcting for ties a significant correlation was reported with $R_s = .22$, $p < .05$ suggesting that the way the patients react and believe in the treatment has an impact on their level of psychological distress.

The above result suggests that patients with less trust in medicine have more psychological distress. Their low trust in medicine and fear of the treatment procedure causes their high level of psychological distress.

Imeson and McMurray (1996) showed that infertile patients felt disempowered by health professionals involved in the infertility treatment process; feelings that were magnified by the fact that they were imposed by the very system that is supposed to help them. Some patients were even distraught by the insensitivity of health professionals. However, whether this level of distrust amongst the patients group in modern medicine and its correlation with psychological distress is specific to infertile patients was further examined by conducting Spearman's correlation coefficient for the norms. The results showed a similar and highly significant correlation (see Table 7.1.18), thus suggesting that indeed it is not just the patients who demonstrate psychological distress in relation to trust in modern medicine, but it is a phenomena shared by all people in the same culture.

Table 7.1.18 Table showing the results of Spearman’s Correlation Coefficient between the Psychological Distress scores and Attitudes Towards Medicine with corrections made for ties for the norms

| | | |
|------------------------|------|-----------|
| Rho | .30 | |
| Z | 4.27 | p < .0001 |
| Rho corrected for ties | .29 | |
| Z corrected for ties | 4.16 | p < .0001 |

7.1.6.1.3 Psychological Distress and Religious Beliefs

A significant correlation was found for religion and psychological distress using Spearman’s Rho with Rs = .24, p < .03. The more religious the person was, the more stressed he/she felt.

Indeed Sonawalla et al. (1999), investigating the relationship between psychological distress and religion amongst infertile patients found a similar result amongst the Indian population and argued that the reason for such a correlation between religion and distress level is that those who leave everything to fate or God, do not explore adequately other coping mechanisms such as problem-solving, or do not try to actively find solutions to their problems.

This could also be true for the present Iranian infertile patients in which it is expected that religious belief dominates all their aspects of every day life. Moreover, Sonawalla et al. (1999) argued that the infertile Indian patients mostly used fatalism - belief in destiny, in life after death and in God’s will when engaged in the life problem.

In fact, one may argue that if the religious infertile person sees infertility as a destiny in preparation for a higher purpose in life and expresses the view that he/she is probably meant to serve God, he/she would receive strength for better coping (Sewpaul, 1999). However,

Sonawalla et al. (1999) explain that in terms of coping strategy, the religious infertile individual did not explore the active problem-solving method for better coping.

In a different study conducted on Israeli infertile patients Merari et al. (1996) reported a negative correlation between religion and level of distress, indicating that the more religious the patients are the less distressed they are. It must be noted that the data from Merari et al. (1996) were on infertile women only who were intending to begin IVF treatment. The discrepancy between Merari et al. (1996) and the research on Indian couples and the present study's finding could be due to the fact that a) men were not included in Merari et al.'s (1996) study and also b) Merari et al. (1996) took the measures prior to the initiation of the IVF treatment. Thus to further explore this discrepancy and explore the relationship between religious belief and psychological distress two separate correlations were conducted on female data taken at, a) before initiation of treatment (see Table 7.1.19) and b) taken from the norms (see Table 7.1.20) to examine if the pattern observed amongst patients is also applicable to the Iranian norms.

Table 7.1.19 Table showing the results of Spearman's Correlation Coefficient between the Psychological Distress scores and Religion with corrections made for ties for women at first assessment

| | |
|------------------------|---------------------|
| Rho | .30 |
| Z | 3.81 p < .0001 |
| Rho corrected for ties | .30 |
| Z corrected for ties | 3.76 p < .0002 |

Table 7.1.20 Table showing the results of Spearman’s Correlation Coefficient between the Psychological Distress scores and Religion with corrections made for ties for the norms

| | | |
|------------------------|------|-----------|
| Rho | .32 | |
| Z | 4.48 | p < .0001 |
| Rho corrected for ties | .31 | |
| Z corrected for ties | 4.40 | p < .0001 |

This result further confirmed the previous finding that women with high level of distress were more religious than those who were less distressed. Indeed, this result is again in line with Sonawalla et al. (1999) and contradicts Merari et al.’s (1996) finding. Finding positive correlation between psychological distress and level of religious belief in the norms could be due to the fact that in both Iranian and cultures like India (Sonawalla et al., 1999) religion plays a significant role in their daily life activities which interact with their psychological distress. In contrast countries like Israel, with a more Westernised attitude, may show a different pattern for the norms and the patients groups.

7.1.6.1.4 Psychological Distress and Cause of infertility

Although, cause of infertility did not come to be significant as a predicting factor in Standard Multiple Regression Analysis, it’s impact on the experience of infertility has been noticed in the literature. Therefore, further one way analysis of variance (ANOVA) were conducted in relation to cause of infertility and with $F(2, 219) = 14.88, p < .0001$ showed there is a significant difference between three groups (“both cause”, “male cause” “female cause”). See Table 7.1.21.

Table 7.1.21 Mean Psychological Distress scores together with their corresponding standard deviations (SD) for the patients with Cause of infertility at all three time phases

| | Mean | SD |
|--------------|------|-----|
| Male Cause | 2.81 | .58 |
| Female Cause | 2.35 | .70 |
| Both Cause | 2.86 | .61 |

(Higher scores indicated higher Distress Level.)

As can be seen in the above Table, “male cause” and “both cause” is associated with greater psychological distress scores. Both these conditions are significantly different from a “female cause” condition.

Post hoc comparisons of the means showed significant differences at $p < .05$ level between the “male cause” and “both cause” in comparison to the “female cause” (see Table 7.1.22).

Table 7.1.22 Post hoc comparison of the means using Fisher’s PLSD, Scheffe’s F-test and Dunnett’s t test for three groups of patients (“male cause”, female cause” and “both cause”)

Comparison: Mean Diff.: Fisher PLSD: Scheffe F-test: Dunnett t:

| | | | | |
|-----------------------------|------|------|--------|------|
| Male cause vs. Female cause | .45 | .18* | 11.91* | 4.88 |
| Male cause vs. Both cause | -.05 | .27 | .06 | .37 |
| Female cause vs. Both cause | -.51 | .26* | 7.30* | 3.82 |

* $p < .05$

Further separate analysis were conducted on the scores of men patients only for all three groups of patients. The results also were similar to the finding above indicating that “male cause” and “both cause” infertility is significantly more stressful than “female cause” infertility for men (see Table 7.1.23).

Moreover a one way independent groups ANOVA on the psychological distress scores showed a significant main effect with $F(2, 108) = 21.3, p < .0001$.

Table 7.1.23 Mean Psychological Distress scores together with their corresponding standard deviations (SD) for the patients with Cause of infertility (men only)

| | Mean | SD |
|--------------|------|-----|
| Male Cause | 2.70 | .59 |
| Female Cause | 2.01 | .52 |
| Both Cause | 2.72 | .58 |

(Higher scores indicated higher Distress Level.)

Post hoc comparisons of the means showed significant differences at $p < 0.05$ level between the “male cause” and “both cause” in comparison to the “female cause” for men (see Table 7.1.24).

Table 7.1.24 Post hoc comparison of the means using Fisher’s PLSD, Scheffe’s F-test and Dunnett’s t test for three groups of patients (“male cause”, female cause” and “both cause”) (men only)

| Comparison: | Mean Diff.: | Fisher PLSD: | Scheffe F-test: | Dunnett t: |
|-----------------------------|-------------|--------------|-----------------|------------|
| Male cause vs. Female cause | .68 | .22* | 17.84* | 5.97 |
| Male cause vs. Both cause | -.02 | .33 | .01 | .14 |
| Female cause vs. Both cause | -.70 | .32* | 9.49* | 4.35 |

* $p < .05$

However, it is important to note that the cause of infertility may interact with gender. Therefore, an independent groups two way ANOVA confirms this claim with a 2 gender by 3 cause (“male cause”, “female cause” and “both cause”) showed an expected significant main

effects for gender $F(1, 216) = 18.41, p < .0001$ and a significant main effects for cause $F(2, 216) = 17.38, p < .0001$. However, most importantly there was a significant interaction with $F(2, 216) = 3.68, p < .02$ (see Table 7.1.25, for Mean and SD).

Table 7.1.25 Mean Psychological Distress scores and corresponding standard deviations (SD) for men and women as per cause of infertility

| Gender/Cause | Male Cause | | Female Cause | | Both Cause | |
|--------------|------------|-----|--------------|-----|------------|-----|
| | Mean | SD | Mean | SD | Mean | SD |
| Female | 2.93 | .55 | 2.69 | .69 | 3.01 | .62 |
| Male | 2.70 | .59 | 2.01 | .52 | 2.72 | .58 |

Generally, it has been shown in most studies that “male cause” infertility is very stressful (e.g. Carmeli & Carmeli, 1994; Mikulincer et al., 1998; Newton et al., 1999). In a study by Nachtigall et al. (1992) it was reported that male cause infertility was more stressful for the men than female cause infertility. Interestingly, finding that “both cause” infertility as stressful as “male cause” in the present study, reinforces the fact that because in both conditions, men are involved, therefore the intensity of the condition is perhaps determined by male involvement. This is basically because men find it very hard to believe that the infertility problem is rooted in their physics. Indeed, the expectation of the couples in Iran seeking infertility treatment, may be somehow diverted to the assumption that the problem would be with the woman not the man. As a result of this way of thinking when an Iranian man finds out that he is the one with the infertility problem, it has a greater impact on him than when his wife is found to be infertile. This will even have a significant effect on his wife which makes life unbearable for both of them.

Similar accounts have been reported in the study by Mikulincer et al. (1998) in Israel, in which

“both cause” infertility and “male cause” infertility were associated with more stress than “female cause”. Indeed there seems to be a sense of protection by wives of infertile men.

This is at least true in other Eastern cultures such as Egypt and India in which the wife of the infertile man tries to protect her husband from public blame, by pretending that she is infertile not him (Inhorn, 1996; Riessman, 1999). Similar finding was reported in a study by Aghanwa et al. (1999) in Nigeria, in which the female partner of the infertile couple holds herself responsible and experiences guilt even if male factors are known to be the cause (Miranda et al., 1995; Aghanwa et al., 1999). Further evidence comes from a study by Sewpaul (1999) in Africa, in which on account of women’s defined child-bearing and child-rearing roles, they assumed personal responsibility and guilt for possible past misdeeds, even where their husbands had medical problem.

7.1.6.1.5 Gender difference

In view of the significance of gender as a predicting variable separate analysis were made for men and women to examine which variables contribute most to their psychological distress. For women the results showed that the multiple correlation R for the regression was significantly different from zero, $F(4, 36) = 3.4$, $p < .01$. Of the four variables entering as predictors of stress for women patients only marital satisfaction was found to be significant (see Table 7.1.26 for Beta coefficient and significance level).

Table 7.1.26 Standard Multiple Regression of Age, Marital Satisfaction, Attitudes Towards Modern Medicine, and Religious Beliefs on Psychological Distress of female patients

| Variable | Coefficient | Std. Err. | Std. Coeff. | t-Value | Probability |
|----------------------------|-------------|-----------|-------------|---------|-------------|
| INTERCEPT | .29 | | | | |
| Age | -.01 | .01 | -.20 | 1.34 | .18 |
| Marital Satisfaction | .74 | .29 | .37 | 2.50 | .01 |
| Attitudes Towards Medicine | .40 | .25 | .23 | 1.57 | .12 |
| Attitudes Towards Religion | .11 | .14 | .12 | .79 | .43 |

$R^2 = .30$, Adjusted $R^2 = .21$, $p < .01$.

A spearman’s correlation coefficient with correction made for ties was conducted on the psychological distress scores of women patients and their scores on marital satisfaction with $R_s = .74$, $p < .01$ (see Table 7.1.27).

Table 7.1.27 Table showing the results of Spearman’s Correlation Coefficient between the Psychological Distress scores and Marital Satisfaction with corrections made for ties (female patients)

| | |
|------------------------|----------------|
| Rho | .39 |
| Z | 2.37 $p < .01$ |
| Rho corrected for ties | .39 |
| Z corrected for ties | 2.36 $p < .01$ |

The above finding indicates that the higher her psychological distress is, the lower marital satisfaction she has. This is similar to the finding by Andrews et al. (1991) in which women reported higher levels of stress with its effect on their marital satisfaction. Also in the study by Raval et al. (1987) women with high anxiety and depressive symptoms reported

higher marital dissatisfaction.

For men the results showed that the multiple correlation R for the regression was not significantly different from zero, $F(4, 36) = 1.05$, $p < 1$.

7.2 Social Extroversion and Infertility

7.2.1 Preface

The immediate question pursued here is whether the social extroversion of infertile patients is significantly different from the norms and, in particular, different from a population of patients who are treated for non-fertility related illnesses?

As has been discussed in previous chapters, the problem of infertility has an impact on the individuals' social interaction. The reason for this, as explained before, and as documented in many research reports (e.g. Whiteford & Gonzalez, 1995; Kronen 1995; Pengelly et al., 1995), is that the society expects the individual to have a normal life by getting married and starting a family. Imeson and McMurray (1996), in interviewing infertile Western couples, stated that "One of the most difficult things these couples had to contend with was the social pressure to have children. With each unsuccessful attempt they were isolated from family and friends with children. Women, especially, expressed the feeling of being excluded from the social nexus of mothers and couples with children, whether close friends or casual acquaintances. Parenthood seemed to be the common ground for friendships" (p1018). Therefore, social isolation results from the social pressure for parenthood. If a couple fails to produce offspring, they may feel completely deviated from normal life style, and feel themselves out of the fertile crowd. As a result of these thought and feelings they feel isolated, and either become withdrawn from the society or are excluded by the society (see e.g. Greil, 1991; Kronen, 1995).

Research on cultural aspects of social extroversion in relation to infertility as reported in chapters 4 and 5, are more scarce. The expectation, however, is that insofar as developing and third world countries are concerned, the degrees of social isolation are much greater. The reasons for this, as explained before, is factors such as stronger religious commitments and its dominance in every day life (Greil, 1991; Baluch et al., 1995; Inhorn, 1996), need for family

support in old age (Touba, 1980; Greil, 1991) and male dominance (Baluch et al., 1998). Consequently one would expect, as the study by Gerrits (1997) on infertile people in Mozambique showed, that there would be a high degree of social isolation for infertile women and a total rejection from social events and ceremonies. Thus, whether the individual simply shies away from social events, or is excluded as a consequence of being infertile, might be a universal phenomenon. However , the degree and nature of isolation and factors contributing to such “exclusion from normal social extroversion” may be different amongst Western and developing societies. This is what has been investigated below.

7.2.2 Comparison of the patients, the control and the norms on their Social Extroversion

The first analysis reported here is to examine whether the degree of social isolation is greater for infertile Iranian patients, compared to the norms and the control group, before initiation of treatment and after a course of treatment.

Table 7.2.1 Mean Social extroversion scores together with their corresponding standard deviations (SD) for the patients and the control at first assessment in comparison to the norms

| | Mean | SD |
|----------------|------|-----|
| Patients group | 2.94 | .42 |
| Control group | 3.14 | .38 |
| Norms Group | 2.64 | .23 |

(Lower score indicated higher Level of Social Isolation.)

As can be seen in Table 7.2.1, patients felt more isolated and were more socially withdrawn than the control at first assessment, and on the whole their level of social extroversion is still comparable to, if not greater than the norms. This is a rather surprising finding.

However, it could be explained by the fact that the patients have yet to be “labelled infertile”. Thus it might be the case that aspects of social behaviour are yet unaffected at this stage of assessment (see below and section 7.2.3, for a different explanation).

Formal analysis of the data showed $F(2, 288) = 44.3, p < .0001$ indicating there is a significant difference between three groups (the patients, the control and the norms). Post hoc comparison of the means showed a significant difference between all three groups (see Table 7.2.2).

Table 7.2.2 Post hoc comparison of the means using Fisher’s PLSD, Scheffe’s F-test and Dunnett’s t test for all three groups (the patients, the control and the norms) at first assessment

| Comparison: | Mean Diff.: | Fisher PLSD: | Scheffe F-test: | Dunnett t: |
|----------------------|-------------|--------------|-----------------|------------|
| Patients vs. Control | -.19 | .15* | 3.31* | 2.57 |
| Patients vs. Norms | .30 | .08* | 26.77* | 7.31 |
| Control vs. Norms | .50 | .14* | 24.59* | 7.01 |

* $p < .05$

However, when data from all three time phases from the patients and control were compared with the norms the following means were obtained (see table 7.2.3).

Table 7.2.3 Mean Social extroversion scores together with their corresponding (standard deviations) SD for the patients and the control (all three time phases) in comparison to the norms

| | Mean | SD |
|----------------|------|-----|
| Patients group | 2.68 | .69 |
| Control group | 2.99 | .38 |
| Norms group | 2.64 | .23 |

(Lower score indicated higher Level of Social Isolation.)

As can be seen in the above Table, the control group remain socially extroverted as the time passes by and treatment progresses, meanwhile the patients’ scores remain similar to the norms’ scores indicating they are more socially isolated.

However, formal analysis of the results showed a significant effect with $F(2, 476) = 18.8, p < .0001$ and Post hoc comparison of the means showed that the difference is due to the control showing more positive social extroversion than the patients and the norms (see Table 7.2.4 for Post hoc testing).

Table 7.2.4 Post hoc Table for comparison between three groups on their Social Extroversion- at all three time phases

| Comparison: | Mean Diff.: | Fisher PLSD: | Scheffe F-test: | Dunnett t: |
|----------------------|-------------|--------------|-----------------|------------|
| Patients vs. Control | -.31 | .11* | 14.43* | 5.37* |
| Patients vs. Norms | .04 | .07 | .62 | 1.12 |
| Control vs. Norms | .35 | .11* | 18.27* | 6.04 |

* $p < .05$

As can be seen in the above Table, all three groups (the patients, the control and the norms) are significantly different on their social extroversion scores. When comparing the two above Tables (7.2.1 and 7.2.3), mean scores for the patients and the norms got closer when the scores included all stages of the treatment. Therefore, it could be explained that, although the patients seemed to be more socially active at first assessment, as the treatment progressed there were indications of being more socially isolated. Nevertheless their score is not significantly greater than the norms. The control group, however, seem to have most signs of social extroversion! This could be the result of successful completion of their treatment. The issue of why “norms” show a more social isolation as a group of infertile patients will be taken up in the discussion. One reason may be that the true “norms” for social extroversion in the

Iranian society have declined due to turmoil of revolution, war with neighbouring country and economic hardships. What one reports here is the shift of distribution of “norms” closer to what is more of a clinical level.

7.2.3 What are the Key Predicting Factors of Social Extroversion of infertile patients?

One might argue that perhaps if the social extroversion of infertile patients are comparable to the norms why bother to investigate the above issue. However, as explained above and as will be discussed in the general discussion, this level of social extroversion is “clinical” even though it is comparable to the norms.

In an initial examination of the results the variables derived from the questionnaire were used in separate standard multiple regression analyses. In order to establish what is the best predictor for social extroversion on the following variables as the Independent variables namely: age, marital satisfaction, attitudes towards modern medicine, religious beliefs, cause of infertility, and gender. The results showed that the multiple correlation R for the regression was not significantly different from zero, $F(6, 73) = 1.6, p < 1.4$. Only one of the above variables contributed significantly to the prediction of social extroversion, namely: marital satisfaction (see Table 7.2.5 for summary Beta coefficient Table and significance level).

Table 7.2.5 Standard Multiple Regression of Age, Marital Satisfaction, Attitudes Towards Modern Medicine, Religious beliefs, Cause of infertility, and Gender on Social Extroversion

| Variable | Coefficient | Std. Err. | Std. Coeff. | t-Value | Probability |
|----------------------------|-------------|-----------|-------------|---------|-------------|
| INTERCEPT | 4.23 | | | | |
| Age | -.01 | .007 | -.19 | 1.50 | .13 |
| Marital Satisfaction | -.43 | .16 | -.32 | 2.66 | .009 |
| Attitudes Towards Medicine | -.01 | .14 | -.01 | .08 | .93 |
| Attitudes Towards Religion | -.03 | .09 | -.04 | .34 | .72 |
| Cause | .004 | .06 | .007 | .05 | .95 |
| Gender | -.06 | .09 | -.09 | .72 | .47 |

$R^2 = .12$. Adjusted $R^2 = .05$. $p < 1.4$.

Interesting to note is a similar negative correlation between marital satisfaction and social extroversion, the more dissatisfied marital relationship, the more socially withdrawn ($R_s = .21$, $p < .001$) (see Table 7.2.6).

Table 7.2.6 Table showing the results of Spearman’s Correlation Coefficient between the Social Extroversion scores and Marital Satisfaction with corrections made for ties for all the patients

| | |
|------------------------|-----------------|
| Rho | -.25 |
| Z | -2.1 $p < .02$ |
| Rho corrected for ties | -.25 |
| Z corrected for ties | -2.20 $p < .02$ |

Whether this finding could be generalised to the norms, was examined with a spearman’s correlation coefficient (see Table 7.2.7).

Table 7.2.7 Table showing the results of Spearman’s Correlation Coefficient between the Social Extroversion scores and Marital Satisfaction with corrections made for ties for the norms

| | | |
|------------------------|------|-----------|
| Rho | .32 | |
| Z | 4.56 | p < .0001 |
| Rho corrected for ties | .32 | |
| Z corrected for ties | 4.49 | p < .0001 |

Results showed that both the patients and the norms were socially withdrawn with lack of marital satisfaction. This finding is similar to the research reports by (West, 1983; Mahlstedt, 1985) in which the level of social isolation even extended to the couple’s own relationship and distanced them from each other. The effects of infertility and infertility treatment as a stressful condition straining the couples, causing social isolation and damaging their marital relationship, is well documented in the Western literature which was discussed above (Raval et al., 1987; Andrews et al., 1991). This is a plausible expectation to see that couples who are socially isolated due to their infertility problems tend to have higher marital dissatisfaction. In Iranian culture once the couples are diagnosed infertile, their relationship could be easily influenced by other people’s comments and statements. For example, both sides of the family may try to encourage the couple to divorce and choose another partner for solving the infertility problem. Studying infertility in Mozambique Gerrits (1997) showed that when the cause of infertility is due to male infertility relatives of the woman require their daughter or sister to divorce, even when the woman does not fully agree with this request. In another study by Chandra et al. (1991) in India, some of infertile women from a rural background reported quarrels and misunderstanding in their marital relationship. Therefore, it

could be concluded that the influence of relatives and friends on the couples' relationship become vital when infertility occurs. The relatives' and friends' comments and influential effect, make the couple distanced even from each other.

7.3 Psychological Variables and likelihood of Pregnancy

7.3.1 Preface

Based on anecdotal research there is evidence that some infertile patients eventually became pregnant “naturally” i.e. not as a direct result of any treatment. In a study on the relationship between the likelihood of pregnancy and men’s secure attachment and their psychological well-being by Mikulincer et al. (1998), it was found that pregnancy likelihood was significantly related to men’s secure attachment and psychological well-being. As a result of this it was concluded that husbands’ secure attachment and psychological well-being made a significant positive contribution to pregnancy likelihood.

Another study by Boivin and Takefman (1995) reported that women who did not become pregnant with IVF reported experiencing more distress during treatment than those who became pregnant. Several other recent studies have also been published indicating similar associations (For example see, Vartiainen et al., 1994 and Meyer et al., 1996).

7.3.2 What are the Key Predicting Factors in Achieving Pregnancy?

In an initial examination of the results, the variables derived from the questionnaire were used in separate standard multiple regression analyses in order to establish what is the best predictor for whether or not a patient became pregnant on the following variables as the Independent variables namely: age, marital satisfaction, social extroversion, and psychological distress. The results showed that the multiple correlation R for the regression was significantly different from zero, $F(4, 73) = 4.1, p < .001$. Two of the above variables, in order of significance, contributed significantly to the prediction of whether or not the couples conceive, namely psychological distress and age (see table 7.3.1 for summary Beta coefficient table and significance level).

Table 7.3.1 Standard Multiple Regression of Age, Psychological Distress, Social Extroversion and Marital Satisfaction on achieving Pregnancy

| Variable | Coefficient | Std. Err. | Std. Coeff. | t-Value | Probability |
|------------------------|-------------|-----------|-------------|---------|-------------|
| INTERCEPT | -.52 | | | | |
| Age | .01 | .007 | .28 | 2.38 | .01 |
| Psychological Distress | .40 | .09 | .57 | 4.06 | .0001 |
| Social Extroversion | .22 | .14 | .21 | 1.51 | 1.3 |
| Marital Satisfaction | .05 | .16 | .03 | .30 | .76 |

$R^2 = .21$, Adjusted $R^2 = .17$. $p < .001$.

The results are somewhat very interesting and reinforce previous claims, for psychological distress (Boivin & Takefman, 1995; Mikulincer et al., 1998) and for age (Neugarten, 1979; Merari et al., 1992; Morrow et al., 1995; Band et al., 1998) that indeed level of psychological distress is a biggest predictor of pregnancy likelihood.

Also in some other studies the researchers have been able to demonstrate the evidence for a direct relationship between women’s low distress level and likelihood of pregnancy (Boivin & Takefman, 1995).

In the present analysis, the couples who scored lower on level of psychological distress were more likely to conceive than those who scored higher $t(35) = -4.7$, $p < .0001$. However, the results of t-test between the age of those who conceived and those who did not showed a non-significant effect. As age and distress were shown to correlate significantly ($r = -0.2$, $p < .002$) it is possible that the main variable accounting for pregnancy is indeed only the level of psychological distress and once the effects of age alone are considered in the regression analysis the F ratio will change to a non-significant value.

A stepwise multiple regression conducted with age and psychological distress as the independent variables found a non-significant F ratio for age once the level of psychological distress is taken out of the analysis (see Table 7.3.2).

Table 7.3.2 Analysis of Variance Table for Age when Psychological Distress was controlled for

| Source | DF: | Sum Squares: | Mean Square: | F-test: |
|------------|-----|--------------|--------------|---------|
| Regression | 1 | .09 | .09 | .58 |
| Residual | 72 | 11.26 | .15 | NS |
| Total | 73 | 11.35 | | |

$R^2 = .008$, Adjusted $R^2 = -.006$. p NS.

Table 7.3.3 Analysis of Variance Table for Psychological Distress when Age was controlled for

| Source | DF: | Sum Squares: | Mean Square: | F-test: |
|------------|-----|--------------|--------------|-------------|
| Regression | 2 | 2.17 | 1.08 | 8.43 |
| Residual | 71 | 9.17 | .12 | $p < .0001$ |
| Total | 73 | 11.35 | | |

$R^2 = .19$. Adjusted $R^2 = .16$. $p < .0001$.

A further 2 Gender by 2 pregnancy outcome factorial ANOVA was conducted on the psychological distress scores which showed expected main effects for gender with $F(1, 70) = 10.1$, $p < .002$ and pregnancy outcome with $F(1, 70) = 14.9$, $p < .0001$. Most importantly, there were no interactions $F < 1$ which suggest that indeed the lower levels of distress in both partners are related to successful conception. However, separate analysis for men and women conducted and showed a significant difference for women with $F(1, 35) = 9.2$, $p < .005$ and a significant difference for women with $F(1, 35) = 6.1$, $p < .01$ (see Table 7.3.4 for summary mean scores and standard deviations- SD).

Table 7.3.4 Mean of Psychological Distress scores together with their corresponding (SD) for men and women patients who had a successful IVF and those who did not have a successful IVF

| | <u>Successful IVF</u> | | | | <u>Total</u> |
|--------|-----------------------|-----|-----------|-----|--------------|
| | <u>Yes</u> | | <u>No</u> | | |
| | Mean | SD | Mean | SD | |
| Male | 1.9 | .56 | 2.4 | .63 | 2.1 |
| Female | 2.3 | .56 | 2.9 | .61 | 2.6 |
| Total | 2.1 | | 2.6 | | |

(Higher scores indicated higher Distress Level.)

As the sample size of those who did become pregnant is too small, further generalisation of the present data has to be made with caution.

What may be concluded here is that at least a contributing factor to successful conception may be patients’ level of psychological distress. More extended research would be needed to give a clear picture on relationship between psychological distress and pregnancy. In the next chapter a general discussion is made of the above findings.

8 Chapter 8: General Discussion

8.1 Preface

Initiating a rather exploratory approach, this pioneering investigation examined the psychological and social aspects of infertility and infertility treatment amongst the Iranian population, in which the main questions explored were:

- i) to examine the psychological distress and social extroversion of infertile Iranian patients in comparison to the norms, and in particular in comparison to a population of patients who were fertile;
- ii) to identify the key contributing variables in psychological distress and social extroversion of infertile Iranian patients;
- iii) to find out if undergoing an IVF treatment cycle had an impact on Iranian patients' Psychological distress and Social extroversion;
- iv) to investigate the key variables in achieving conception amongst Iranian infertile couples.

On a more global level the aim of the investigation was to evaluate the results of the present findings on Iranian infertile patients in relation to comparable research on a mainly Western population. As argued in the previous chapters, there are expectations that insofar as psychological and social aspects of infertility and infertility treatment are concerned, in view of such factors as social expectations, religious beliefs and attitudes towards modern medicine, there could be evidence of some culture specific findings.

Immediate implications of the present investigation are on the issues of advancement of theories, counselling infertile patients and, of course, paving paths for follow up investigations.

The structure followed in writing up this chapter is, therefore, as follows:

Firstly, a reminder of what steps were taken to fulfil the above aims. This is followed by highlighting what were the key points of the findings and contrasting with the Western

literature. In relevant sections there are discussions and interpretations of the results and, where appropriate, relevance to theories. The subject of counselling needs of infertile patients is also discussed.

A major penultimate section of this chapter is devoted to discussion of some of the key strengths and, indeed, possible weaknesses associated with research on infertile Iranian patients. It is concluded that such information is crucial for better understanding of research in a Iranian/Middle Eastern environment.

8.2 Summary stages

In the absence of a validated questionnaire measuring psychological and social aspects of infertility specifically geared to a Iranian population, the main aim of the first phase of the investigation was to develop a valid and reliable measure. This was achieved through developing a questionnaire and administering it to 197 Iranians for the purpose of validation and reliability analysis. The results of phase one and the Principle Component Analysis on the questionnaire showed a five factor solution which was labelled: Psychological Distress, Social extroversion, Marital Satisfaction, Attitudes towards modern medicine, and Attitudes towards religion.

In phase two of the investigation a number of clinics involved with fertility treatment were targeted and the validated questionnaire was administered to patients at three time periods, namely before diagnosis of infertility (this was after six months to a year of unprotected intercourse advised by their GP), during treatment (this was the time when Profasi injection-HCG was administered for egg collection) and after a cycle of treatment (a week after the negative result of β HCG). A group of fertile patients (the control group) also attending the clinic completed the questionnaire in three successive stages each three weeks apart.

From the initial sample of 130 couples in the patients' group and 59 couples in the control group only 37 of the patients' group and 10 of the control group participated in all three stages.

In a follow up phase (phase three) the data from the questionnaire that belonged to those who eventually conceived after the last unsuccessful treatment cycle were subjected to statistical analysis in order to identify factors contributing to successful conception. This group of patients were only 7 couples out of 37 patients.

8.3 Summary of the Findings

The results of psychological distress generally found that indeed being infertile is associated with a greater degree of psychological distress before any treatment had begun and after an unsuccessful cycle of IVF treatment. This finding is true for both the men and women investigated. The degree of this psychological distress, however, is significantly greater for women than for men. Gender, marital satisfaction, attitudes towards modern medicine, and religious beliefs were seen as main predictors of psychological distress. Lower levels of marital satisfaction and distrust in modern medicine were associated with greater psychological distress. However, those patients with greater religious beliefs also scored higher on psychological distress measures.

Of the above predictors of psychological distress marital satisfaction played a more significant role for women patients, whilst for men none of the above were found to be significant.

Being diagnosed as either male cause or the cause related to both partners created more psychological distress than the cause of infertility being labelled as female cause. However, being labelled as male cause or both created greater psychological distress for men than for women.

The results of social extroversion showed that although the patients' data shows significantly

more socially withdrawn levels than a comparable group of clinical but not infertile patients, it is nevertheless comparable to the norms before and after the treatment (the possible reasons for this rather surprising aspect of the finding are discussed in section 8.6 of this chapter). The main predictors of social extroversion for infertile patients was marital satisfaction. However, lower levels of marital satisfaction and undergoing treatment were associated with a greater degree of socially withdrawn behaviour.

The seven patients who eventually conceived scored significantly lower on the psychological distress scores than those who did not conceive. This finding was true for both male and female patients.

Some aspects of the data are also strongly supported in the mainly Western literature, namely the fact that there is a great degree of psychological distress for infertile patients both before and after the treatment. Also the fact that women are more stressed than men is fully documented in the literature. However, issues related to religious beliefs and cause of infertility and attitudes towards modern medicine are factors that may be more culture specific. The issue of psychological distress being the main predictor of conception also finds support in the Western literature.

What, however, was unexpected for the Iranian sample is the finding that infertile patients do not differ from the norms on social extroversion. In the next sections interpretations are made of the above findings.

8.4 Psychological Distress and infertility

The fact that infertility is associated with being psychologically distressed seems to have a universal appeal. In both Western and current research on Iranians there is evidence of great psychological distress for both men and women with the effects being greater for women in both cultures. However, the nature of the underlying reasons for this level of stress may be

different insofar as Iranian and Western research is concerned. The following may be factor specific to the Iranian culture.

8.4.1 Religion

What one could perhaps conclude here is that for patients in a mainly religious dominated society religious beliefs seems to play a more crucial factor. There was indeed a significant correlation between level of psychological distress and religious beliefs. Those patients with stronger religious belief showed greater psychological distress. Several possibilities may be entertained here. One account may be that more religious patients see their infertility as an act of God and perhaps a punishment for their “sins”.

Another possibility may be that patients see their lack of conception as letting God down in fulfilling their role and commandments of Islam “Marry and multiply for I will make a display of you on the Day of Judgement”, a saying of the Prophet Mohammed (Inhorn, 1996, p222).

Yet another possibility could be that more religious people are more traditional and it is the deeply rooted tradition that expects “normal” way of life to be a life of family and many children. Such patients may see themselves more under pressure to fulfil their role in such a society.

Whilst there are not many studies that have directly investigated the role of religion in relation to infertility and infertility treatment, some studies on US patients (Zoldbrod, 1993) suggest that sometimes more religious people in the West cope better with their infertility problem than less religious persons, possibly because their religious beliefs are not entangled with their social life. Religion, politics and social behaviour are to many Western people distinct entities. This is contrary to how religion is entangled in every aspect of Iranian society. Thus the paradox in findings between the West and Iran is perhaps more related to the extent to which religion plays a role in one’s daily life. It is therefore the subject of a follow-up investigation to see the

exact nature upon which religion affects psychological distress. Such a study, however, may be more qualitative in nature and would require a great degree of ingenuity to devise an approach that may not be seen as intrusive and offensive to infertile Iranian patients.

8.4.2 Gender differences and Psychological Distress

Another universal aspect of the findings is the fact that women in all cultures show greater signs of distress than men. However, with regard to the present data it does seem to be the case that marital satisfaction is at least one predicting variable. Women with lower levels of marital satisfaction are seen as more distressed whilst for men there was no relationship.

Looking closely at the items of this factor such as “Children are the joy of life”; “Life without a child is not complete”; “The future is more promising for those couples who have children rather than those who have not”, one may see some support for the gender role theory (Horwitz, 1982) which maintains that women value parenting, and are inadequate if they do not become mothers.

Seeking other reasons for women’s greater level of psychological distress is, however, not as straightforward. Here again several possibilities may be entertained. Firstly, the fact that women bear the brunt of IVF treatment (i.e. injections, egg collection, scan and so on) may be a contributing variable. However, as found earlier (see also Baluch et al., 1992a), women were stressed regardless at which stage of treatment (initial, during and after) they were assessed. Another possible reason may be that women in all culture groups are more distressed than men in view of the old myth that if one is infertile it is mainly the fault of women. With such “halo effect” rooted in the minds of infertile couples it is no surprise that women’s assessment of psychological distress is higher than men at all times.

Contributing to the roots of this “female fault myth” is the fact that women are the main actors in the IVF scenario or most infertility related treatments such as IUI or GIFT. When the

treatment fails all eyes may be staring at the woman and seeing her as the “cause” of failure (see Stanton & Dunkel-Schetter, 1991 for a related argument for the Western women). A subject of a follow-up investigation may seek Western and non-Western attitudes towards which gender one should blame more for infertility and failing a course of treatment cycle.

Yet another explanation for gender differences in levels of psychological distress is the observations made by Greil (1997). According to Greil when analysing responses from men and women in relation to their psychological distress measures one needs to take into account the issue of portraying a socially desirable image. The controversy could be due to the fact that social desirability bias might be more of a factor for infertile men than it is for infertile women. Berg and Wilson (1990) suggest that infertile men may have a stronger tendency than infertile women to present favourable images of themselves to researchers and clinicians. Thus one might expect women in general, regardless of the cause of infertility, to show greater signs of distress, whilst men no matter what the degrees of distress they experience express more control in their psychological well being, a pattern that was also noted in Baluch et al. (1998) in relation to Iranian men. According to what Iranian men reported in their survey there was indeed a great degree of household control by men even though they were found to be infertile. However the spouses of these men gave a different account, one of great female dominance in a heavily male dominated society!

Another explanation that generally women suffer more than men is in view of the fact that men have more options open to them e.g. re-marry, whilst women (even though their partner is infertile) having lost their virginity have less of a chance to seek a new partner. Thus there is no surprise that regardless of the nature and cause of infertility and who is to blame women suffer more; a finding that is also echoed in a study by Andrews et al. (1992) in which women were found to be more stressed than their partners. Women in Andrews et al.’s (1992) study

reported their infertility as being the most major life time problem.

A final note is that it has often been reported that Eastern women (e.g. India) often hide from others the fact that their partners are infertile. This is because men are breadwinners in these countries. Once found to be infertile they lose face in a society where having children for religious and social reasons is a necessity. Thus by hiding their infertility and even blaming lack of conception to be the woman's fault they not only save their marriage but also their survival in the society.

8.4.3 Psychological Distress and Attitudes Towards Modern Medicine

One rather expected finding in the present thesis was that attitudes towards modern medicine did play a key role in patients' psychological distress. Those with lower levels of distrust were seen as being more distressed. Such a finding has particular appeal for counsellors and staff dealing with infertile patients. For if it is true that psychological distress may play a role in chances of conception (Mikulincer et al., 1998) (as was also found in the present thesis) it is crucial for counsellors and medical staff to minimise as much as possible patients' psychological distress.

The counsellors' role should be to raise the levels of patients' trust in relation to medical support. An interesting follow-up investigation, however, could explore patients' level of trust in medicine between those who received treatment in a Western country as opposed to those treated in clinics in Tehran. In particular, if it is true that most Western patients do indeed have a high regard for modern medicine, at least in the sample assessed by Strauss et al. (1998) in which most of the participants, male 39% and female 46%, had high values in medicine/trust in medicine. Is the same true of Iranian patients? Would it be the case that levels of psychological distress and attitudes towards modern medicine show significance for those seeking treatment in Tehran whilst such effects were absent for those treated in a Western country? If so, one

could entertain the old myth that “Westerners could only do the miracles”!

8.4.4 Cause of infertility and Psychological Distress

In relation to cause of infertility having an affect on psychological distress, the present study found that a male cause diagnosis and a diagnosis attributed to both a male and a female cause result in greatest psychological distress. Since the number of patients diagnosed as both male and female is relatively lower (five couples had both male and female cause infertility) it is possible to argue that it is basically when a man is diagnosed as infertile that creates the greatest psychological distress. As discussed earlier, results of research on Western population also show a similar pattern (see e.g. Connolly et al., 1992; Nachtigall et al., 1992; Slade et al., 1992; Morrow et al., 1995) that when men are the cause of infertility there is generally a greater level of distress amongst couples than when the cause of infertility is “unknown” or related to the female partner. The reason for male cause being more stressful for both partners is not very clear. However, one way to explain why male cause is most distressful for both couples than female cause (or when both partners are infertile), could be inferred from a survey by Baluch et al. (1995). In the latter study Baluch et al. (1995) reported a significant reluctance by both Western and Iranian women on the subject of sperm donation. Fifty fertile and 50 infertile Iranian women and 25 British infertile women were administered the questionnaire. They were asked about their beliefs and attitudes to sperm donation. The women surveyed maintained that they would rather remain infertile than accept sperm donated by another man. This reluctance to accept sperm donation, added to the fact that to this date very little advances have been made in relation to male infertility treatment (see chapter 3), could be further explanation as to why male cause is most stressful for both partners than other causes of infertility. The simple fact that there is now no hope to conceive! (see also the argument on gender differences in the previous section).

Similar accounts have also been reported in relation to Israeli patients. As mentioned in chapter two, Mikulincer et al. (1998) examined 80 infertile couples undergoing medical treatment (by administering the Attachment Style Scale, the Mental Health Inventory and the Dyadic Adjustment Scale) and one year later data were collected on whether women became pregnant. They found that “male cause” infertility and “both cause” infertility were associated with more distress than the other cause of infertility. They explained that this finding could be due to the range of treatments available in the clinic for female infertility and not for male infertility.

8.4.5 Age and Psychological Distress

It is important to note that both the present data, and what is mainly reported from Western research, shows no direct relationship between age and levels of psychological distress for either men or women (e.g. Abbey et al., 1992). One possible reason for such a finding is that in the present sample the mean age of patients was 31.9 with a $SD = 6.3$. Thus with a rather “homogeneously” clustered age group, finding a significant relationship is rather hard. Another possibility is that younger patients are the ones who generally either drop out of any assessment or from treatment. One careful review of several reported Western data shows that in both Western sample investigated and the present data the mean age group of patients is indeed in the mid 30’s. For example in Berg et al.’s (1991) study, mean age was 32, Edelmann et al.’s (1994) mean age was 34 with a SD of 5, and Morrow et al.’s (1995) mean age was 33. It is possible that the data subject of analysis in most research on infertility is “biased” towards middle aged couples as younger patients are those who typically do not take part in the investigation.

8.5 Psychological and Social Aspects of IVF treatment

One of the important aspects of the present investigation was that the measures taken from the patients was before initiation of treatment, during IVF treatment and after an unsuccessful treatment cycle. Thus it is possible to make inferences as to possible effects of undergoing treatment on the patients' psychological and social behaviour. The results generally showed that patients are distressed before and after the treatment.

However, interesting to note that the mean psychological distress scores of both men and women tend to go down during IVF treatment (see Table 7.1.13). This is possibly an indication that if anything during treatment patients are not as stressful as at other stages. A similar account was reported by Connolly et al. (1992) that the level and intensity of negative feelings of patients undergoing IVF treatment does not increase as time goes by. Connolly et al.'s (1992) study assessed the patients at two stages, first when they came to the clinic and then 7-9 months later. By the second assessment, all the medical tests, investigations and cycle of treatments were complete. The couples were assessed on their personality characteristics psychopathology, perceived social support, sex role identity and marital satisfaction. Finally the results for both men and women showed that as treatment progressed and time passed by, the depression level remained stable and anxiety level even declined except for those men who diagnosed with male cause infertility.

Moreover, Baluch et al. (1993) reported that Shi'ite Iranian women do indeed welcome any painful aspects of IVF in the hope that a "self inflicted wound" as a result of the treatment may give them greater divine strength to tackle their infertility problem.

On the social extroversion variable, however, it was noted that further into the treatment Iranian patients become more socially withdrawal. This is understandable as being infertile and undergoing treatment is not a socially desirable factor in Iranian society. No surprise that

patients would not want to share their experience with other “unsympathetic” members of the family or friends.

8.5.1 Gender differences and treatment

The gender difference analysis at time of assessment also showed interesting results (see Table 7.1.13). Whilst women were significantly more distressed than men at all three stages of assessment, nevertheless there was a similar pattern of distress scores for both groups at the three stages. Both men and women showed a decline of psychological distress during treatment and an increase in score after unsuccessful treatment cycle. Similar accounts were found in a study by Beutel et al. (1999), in which 281 couples undergoing infertility treatment were assessed on treatment-related distress and depression. Treatment-related distress was generally higher for women than for men.

Beaurepaire et al. (1994) has reported that in general IVF procedures is very stressful and couples are increasingly reliant on each other for both emotional and physical support during this stressful period. It was shown that men and women differ in how they cope. Nevertheless, there have been studies that have shown no significant effect due to gender. Collins et al. (1992), however, using a self-report questionnaire found no main effect for gender regarding perceptions of their stress on a sample of 200 couples entering an IVF programme. The effect of gender did not reveal any statistically significant differences. Perhaps it is safe to conclude that generally undergoing IVF is not perceived as being painful at least for those who attempt the treatment. As noted by Van Balen and Vendurmen (1999) there are some patients who would never attempt this treatment due to a general medical fear. Those who do attempt IVF, both Iranians and Western population, may even regard the treatment as some form of “comfort” a sense of “I feel I must try IVF; at least then I can be sure I have done everything possible” (De Zoeten et al., 1987, cited in Golombok, 1992, p210).

8.5.2 IVF affecting marital satisfaction

As argued in chapter 3 one of the salient aspects of infertility treatment, in particular IVF, is that diagnostic procedures and treatments for infertility are generally invasive, technically complicated, and difficult for even an educated lay person to understand. Details of a couple's sexual relationship are recorded and prescriptions for changes in the frequency and timing of intercourse are common (Campbell et al., 1991). Such procedures can threaten the couples' sense of control over their sexual relationship and their privacy is violated (Matthews & Matthews, 1986). Nevertheless, most Western research concludes that the couples have felt more close to each other when undergoing infertility treatment. They have even reported a stable marital and sexual relationship, some have called the experience of infertility treatment as a relieving factor, making it easier for them to come to terms with the reality of childlessness (see e.g. De Zoeten et al., 1987).

In chapter 5, however, it was argued that for most Iranians courtship rituals and sexual/marital behaviour may be different than for Western population. There is normally no sex before marriage and most passionate sexual behaviour is rather uncommon at least amongst the working class. Thus it may be argued that undergoing IVF may not affect marital/sexual satisfaction as much as it may affect Iranian population. Nevertheless a significant correlation was found between time of assessment and marital satisfaction ($r = .37, p < .0001$) indicating that as time goes by these couples become less satisfied with their marriage. It is possible that for Iranians the reality of not having children, together with the stigma that society places on infertile couples and the intrusion of "unsympathetic" others, may damage any closer relationship between the couples, hence a sense of alienation from marriage and sexual behaviour.

8.5.3 Psychological consequences, post-IVF treatment

In the present study the patients were only assessed after one cycle of unsuccessful treatment. Moreover, the data from those who eventually conceived was analysed in relation to those who did not conceive. Much follow-up work is needed to examine the fate of those who underwent a number of unsuccessful treatment cycles. Understanding the psychological and social behaviour of this group of patients is crucial if one is to attempt to provide appropriate counselling and social support for this group of patients.

8.6 Social Extroversion and infertility

The present data showed no significant difference in social extroversion of infertile patients as opposed to the norms. Indeed if anything the patient group appeared more socially active than the norms. Although as treatment progressed it did appear that there were some changes in social extroversion with infertile patients becoming more socially withdrawn.

The Western literature, however, is not particularly rich on this topic. Nevertheless what has been reported, also discussed in chapter two, suggests that there is a degree of social isolation with infertile patients (see e.g. Blenner, 1990; Greil, 1991; Kronen, 1995; Whiteford & Gonzalez, 1995; Pengelly et al., 1995; Gerrits, 1997).

So the question is why is it that infertile Iranian patients do not show a higher degree of social isolation in comparison to the norm group. The answer to this might be two-fold: firstly the Iranian population has undergone a significant psychological change during the past 20 years. The years of revolution, followed by an eight year long war with Iraq, and economic hardship might have taken its toll on the mood of the nation and degree of social extroversion. Hence it is quite possible that indeed the “norms” for the nation have reached the borders of a “clinical norm”. What one observes here is not the fact that there is no difference in social withdrawal scores between infertile patients and the norms, rather the norms have shifted more towards

the clinical group. Moreover, it is possible that the clinical group may exaggerate their level of social extroversion, particularly before any diagnosis/treatment has been made as a “defence mechanism” for not admitting to any fertility related problem.

If the above accounts are true the infertile patients are indeed socially withdrawn partially in response to the treatment. Similar accounts have also been reported on Western population. For example, Blenner (1990) has categorised the emotional stages that the infertile couples experience and explains that during the treatment period the couples have a high focus on the treatment and even forget about other aspects of their life (e.g. social interaction). At this stage they become detached from the outside world (particularly the fertile world) and become isolated. Also, in a study by Pengelly et al. (1995) on couples undergoing infertility treatment, it has been demonstrated that women are even distanced from their mothers, sisters and friends because of finding it difficult to talk to them about their infertility problem. Their husbands shared the same experience and as a group they felt social isolation.

In relation to Iranian patients, marital satisfaction was shown to be important predictors of social extroversion. Such behaviour is, however, expected particularly from a Iranian society in which the “label” of being infertile is immediately associated with significant reactions from all sectors of the society. Such reactions are bound to have an effect on the couples’ marital satisfaction and hence their degree of social withdrawal.

8.7 Pregnancy and Psychological Distress

One of the most important findings in the present study is the fact that those couples who eventually conceived scored consistently lower on the stress questionnaire than those who did not conceive. The significance of this finding is that it might help to some extent with the debate on whether stress is a cause or consequence of infertility (Rubenstein, 1951; Fischer, 1953; Rothman et al., 1962; Belonschkin, 1962).

Indeed if it was the level of stress of those patients who eventually conceived that contributed to their conception then the present findings have great implications for a psychogenic hypothesis and counselling aspects of infertility which will be discussed later.

However, in support of the present finding, Mikulincer et al. (1998) had similar results. In Mikulincer et al.'s (1998) study, 14 out of 80 infertile women succeeded in becoming pregnant one year after the completion of the research questionnaires. Statistically it was reported that pregnancy likelihood was significantly related to men's secure attachment and men's well-being. A study by Boivin and Takefman (1995) reported that women who did not become pregnant with IVF reported experiencing more stress during treatment than those who became pregnant. Several other recent studies have also been published indicating similar associations (For example see, Vartiainen et al., 1994; Meyer et al., 1996; Sanders & Bruce, 1997).

However, as discussed earlier, the debate is still on-going between those who value any relationship between psychological distress and pregnancy (Rubenstein, 1951; Fischer, 1953; Rothman et al., 1962; Belonschkin, 1962;) and those who see no link between the two factors (Schover et al., 1994; Slade et al., 1997). These issues were discussed in more depth in chapters two and three.

8.7.1 Is there support for Psychogenic theory

It is important to note that all 7 patients who eventually conceived did so as a result of treatment, not as a result of natural conception. Thus psychological health alone could not have been responsible for their conception, nevertheless it is also true that such patients did score significantly lower on psychological distress measured at all stages of treatment. Thus perhaps there is indeed a link between levels of psychological distress and becoming pregnant. It is possible that some aspects of the treatment may function well if patients enjoy a degree of relaxation rather than being over-anxious.

Such effects being physical e.g. hormonal change (Harlow et al., 1996) or “logistic” e.g. Baluch et al., 1992a). Indeed Baluch et al. (1992a) noted that more stressed patients have poorer memory and are most likely to miss on the timing of their nasal spray which is crucial to the success of IVF treatment. The implications of such a finding, if true, have greatest impact for counsellors dealing with infertile patients i.e. to provide levels of psychological comfort before, during and after treatment.

8.8 Methodological Issues

Whilst all attempt were made to provide a carefully planned and well executed research there are still some unavoidable methodological and practical issues that may pose certain problems with the present findings. These issue will be tackled in this section.

8.8.1 Honesty of the Responses

It is very possible that in situations of responding to a questionnaire patients do try to portray a more psychologically healthy and socially desirable profile. This could be for a number of reasons. For example patients might feel that any negative responses may be taken as not being good candidates for the treatment. In particular if they receive funding from the government. To tackle this issue the author has made assurances of anonymity and explained that their responses is taken purely for research purposes. Also to tackle the issue of couples trying to think alike when responding to the items their responses were taken in separately by male and female researchers. That is a female researcher asked the female partner to complete the questionnaire whilst a male researcher dealt with completing the questionnaire by her partner.

The issue may be raised here that perhaps a qualitative approach might have been more fruitful? There are several reasons to refute this; firstly a careful observation of infertility

research indicates that a significantly majority is based on quantitative data e.g. according to Greil (1997), at least 94 quantitative articles and only 26 qualitative articles on this theme have been published since 1986. Thus for the purpose of comparison with Western data it was more appropriate to have a quantitative data.

Secondly, as noted by Baluch (1992) Iranian men will not allow their spouses to engage in a lengthy interview without their presence. If women were to be interviewed in the presence of their spouse this could affect their sincerity of their response even more so than completing a Likert scale measure.

8.8.2 Lack of participation- Sample size

Whilst it is true that a critical point made earlier made about the literature on infertility (see chapter 4) was the small sample size in most research reports, the same may be true about the present study i.e. a sample of 37 couples (and 10 control) is rather small for a comfortable generalisation. This is not just true for approaching participants for research in Iran rather it seems that it is true even for Iranians or Middle Eastern immigrants to the west. In a study by Lipson and Meleis (1989) on health issues of the immigrants, have pointed out the methodological issues with Middle Eastern immigrants and stated that “Middle easterners are not easily recruited as research subjects, as many distrust organisations. Even a researcher representing ‘the university’ can be suspected because connections between the university, government and public agencies are the rule in some Middle Eastern countries” (Lipson & Meleis, 1989, p105). Other issue is giving indirect answer to the question or telling a story which finally compromise the correct answer (Lipson & Meleis, 1989).

In relation to the present study it was noted that many patients declined to take part at any stage, yet a significant number dropped out as treatment progressed. Reasons for lack of participation were not investigated as it might have been seen as more intrusion in the

workings of the clinic. However a follow-up research could explore reasons for such a lack of participation amongst infertile patients in Iran.

8.8.3 Is the sample biased?

It may be true that the sample tested here may be biased i.e. of those who will take part in an infertility research even though it involves several commitments. Is this not a biased sample? What if one had access to the psychological and social measures of those (silent majority) who did not take part? Would they be any different from the present data? Are those who do not participate in research of this kind more distressed, hence they take no part in research? Taking the argument even further one could ask if the present sample biased because one is dealing with a (minor?) population of patients who actively seek treatment. What if one is infertile yet has no desire for having children? at least to the degree of undergoing prolonged, painful, costly and a risky infertility treatment? Does the psychological and social measures taken here reflects the true measures of an infertile person or an infertile person who actively seeks a solution to his/her problem (and is willing to take part in any questionnaire completion at various stages)? Such observations have also been made elsewhere. According to Greil (1997) and Dunkel-Schetter and Stanton (1991) there is little known about the psychological status of those who do not pursue medical options. This is because almost half of infertile couples do not seek treatment and this represents a serious generalisation problem. So the biggest problem with regard to sampling is that people who do not seek treatment have been left totally unstudied (Greil, 1997).

The answer to this question is hard to come by, yet as explained through out this research this is indeed a pioneering research with many lessons to be learned for future researchers and many unanswered questions to pose itself as subjects of follow-up investigation.

8.8.4 Is the norm group too small?

This might be true in particular when statistical rule indicates that one needs two participants for one item, thus from an original 128 items questionnaire one would have expected a 256 participants. This indeed was found to be a rather impossible task. Some of the reasons for lack of participation is mentioned above, in particular lack of trust that has gradually developed in Iranian society in relation to country's political situation. Many people shy away from any commitment no matter how trivial for the fear of prosecution! The 197 approached are therefore a significant achievement by Iranian standards.

8.8.5 Why shared variance is so small?

It is true that the factor analysis showed that only 27.6% of the shared variance is accounted by the questions. This is rather small by comparison to a Western research. However, one has to admit that whilst taking a 100 people from the streets of a Western city may reflect a rather "homogenous" group of people in terms of level of education, attitudes, life style and so on, a 100 sample from streets of Tehran is rather different. Iranian population even targeting university students differ largely in the factors mentioned before. A "Western minded" individual differs sharply from a "Islamic" minded citizen of Tehran such lack of homogeneity in the sample may account for lack of correlation in responses hence lack of greater shared variance.

8.8.6 Should standard validated Questionnaires have been used in parallel to the one developed here?

It is true that the only questionnaire used here was the one developed for the purpose of the study. There are several reasons for this action. Firstly the advantage of developing measures for studies of infertility is that they can be tailored specifically to the targeted

populations, and they can include all theoretically and clinically important factors. At this stage of infertility research, there is a risk of missing out crucial aspects of subjects experiences unless we formulate a new tool for measuring these experiences. This tool can be put into practice in order to weed out problems that accompany instrument development, such as poorly worded or redundant items and response option problems. Thus one may suggest to use both standard measures (e.g. State Trait Anxiety) along side the one developed for the purpose of the research (Dunkel-Schetter & Stanton, 1991). However, in relation to Iranian population it has been noted that one finds it rather hard to validate such standard psychological measures in Iranian (Baluch, 1992). Thus, to tackle the above problems appropriate items from the standard psychological measures were used in the original sample.

8.8.7 Why certain stages in treatment were assessed?

The patients group were administered the questionnaire at three time periods during treatment. The reason for administering questionnaire before diagnosis was to provide sound baseline not contaminated with any worries of diagnosis. The reason for 24 hours before egg collection (where the last injection has been administered either by the patient herself or by her GP) was that patients are indeed half way thorough treatment and more importantly they are not injecting any more drugs for a significant period of time. It is possible that drugs affect mood temporarily (Klein, 1989; Gassbeek & Leerentveld, 1993; Benson & Robinson-Walsh, 1998) and thus any changes in scores may be an artefact of drugs not treatment per se. Finally patients were tested a week after result of blood test (β HCG). This is an ideal time when the patients could have reflected upon the experience and consulted further action.

8.9 Implications

Most direct implications of the present study is for counsellors and medical staff dealing with patients to deal with issues and worries patients bring with themselves and to find ways of tackling them. The understanding that women take the sheer volume of psychological distress, the fact that religious beliefs, attitudes towards modern medicine, marital satisfaction and undergoing treatment do play a role in the psychological and social profile of the couples is important information for counsellors and medical staff. For example it may be true that passionate love making and foreplay as it may be the case with Western population is lacking for most Iranians (see chapter five) yet infertile patients in Iran seem to suffer as much in their marital relationship as a result of treatment as was documented in the West. Such similarities and universality in psychological and social facets of infertility seems to point the finger to more carefully planned research, understanding of patients' psychological needs the fact that whilst medical sciences have yet to conquer infertility it is the role of psychologist to ease the transition!

8.10 Conclusion

Psychological research and theories are heavily biased on "Western" data and participation. This is more so evident in the area of psychological and social aspects of infertility and infertility research.

How, people in diverse cultures react psychologically and socially to their infertility problem has to be subject of many future research projects.

The present pioneering/exploratory research, however, showed that although there are many aspects of culture, social life and religion that is so different between Iran and the West, there are nevertheless many similarities in how the two diverse cultures react psychologically and socially to their infertility problem.

In both cultures there is evidence of great psychological distress and social withdrawal. For both Iranian and Western women being infertile is more distressful than for men (perhaps for different underlying reasons). Similarly a contributing factor to successful conception is seen to be lower levels of distress.

Whilst this exploratory research has provided some insight into the psychological and social aspects of infertility and infertility treatment on Iranian population, it has in turn opened many new avenues for follow-up research.

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Appendices

Appendix 1: The complete list of questionnaire items administered to 197 Iranians for the purpose of validation

128-item Questionnaire in English followed by the complete questionnaire in Farsi

The General Questionnaire

SEX: AGE: RELIGION:
EDUCATION/OCCUPATION:

This Questionnaire is designed to assess people's attitudes to various social, psychological and health related issues. Each statement is followed by a series of possible responses: strongly disagree, disagree, agree or strongly agree. Read each statement carefully and decide which response best describes how you feel. Then put a tick over the corresponding response. Please respond to every statement. If you are not completely sure which response is more accurate, put the response which you feel is most appropriate. Do not spend too long on each statement. It is important that you answer each question as honestly as possible. ALL INFORMATION WILL BE TREATED WITH THE STRICTEST CONFIDENCE.
(“SD”, “D”, “A” and “SA” are stand for “Strongly Disagree”, “Disagree”, “Agree” and “Strongly Agree”.)

| | | | | |
|--|----|---|---|----|
| 1. My life is full of things that interest me. | SD | D | A | SA |
| 2. I work under a great deal of stress. | SD | D | A | SA |
| 3. If even a person is feeling good, he/she should get a general physical examination every year. | SD | D | A | SA |
| 4. I find it hard to keep my mind on a task or job. | SD | D | A | SA |
| 5. Most of the time I would rather sit and daydream than do anything else. | SD | D | A | SA |
| 6. I have not lived the right kind of life. | SD | D | A | SA |
| 7. I do not mind being made fun of. | SD | D | A | SA |
| 8. If I take care of myself, I can avoid illness. | SD | D | A | SA |
| 9. I certainly feel useless at times. | SD | D | A | SA |
| 10. What others think of me does not bother me. | SD | D | A | SA |
| 11. I feel weak all over much of the time. | SD | D | A | SA |
| 12. There is very little love and companionship in my | | | | |

| | | | | |
|--|----|---|---|----|
| family as compared to other families. | SD | D | A | SA |
| 13. Some of my family members have habits that bother and annoy me very much. | SD | D | A | SA |
| 14. I like to visit places where I have never been before. | SD | D | A | SA |
| 15. Most doctors are more interested in their incomes than in making sure everyone receives adequate medical care. | SD | D | A | SA |
| 16. I believe my sins are unpardonable. | SD | D | A | SA |
| 17. Life without a child is not complete. | SD | D | A | SA |
| 18. I have never been in love with anyone. | SD | D | A | SA |
| 19. Most of the time I wish I were dead. | SD | D | A | SA |
| 20. I wouldn't go to a hospital unless there was no other option open to me. | SD | D | A | SA |
| 21. I love happy songs and enjoy listening to them most of the time. | SD | D | A | SA |
| 22. Almost everyday something happens to frighten me. | SD | D | A | SA |
| 23. At parties I am more likely to sit by myself rather than join in with the crowd. | SD | D | A | SA |
| 24. I love to go to gatherings/parties. | SD | D | A | SA |
| 25. I enjoy children's company. | SD | D | A | SA |
| 26. Give the chance, I could do some things that would be of great benefit to the world. | SD | D | A | SA |
| 27. I am never happier than when I am alone. | SD | D | A | SA |
| 28. My worries seem to disappear when I get in a crowd of lively friends. | SD | D | A | SA |
| 29. It makes me nervous when people ask me personal questions. | SD | D | A | SA |
| 30. I am not happy with the way I am. | SD | D | A | SA |
| 31. Modern medicine can cure almost any illness. | SD | D | A | SA |
| 32. The future is too uncertain for a person to make serious plans. | SD | D | A | SA |
| 33. I am usually calm and not easily upset. | SD | D | A | SA |
| 34. If you wait long enough, you can get over almost any disease without getting medical aid. | SD | D | A | SA |
| 35. Ghosts or spirits can influence people for good or bad. | SD | D | A | SA |

| | | | | |
|---|----|---|---|----|
| 36. I always try to be pleasant even when others are upset or critical. | SD | D | A | SA |
| 37. I believe that people should keep personal problems to themselves. | SD | D | A | SA |
| 38. My good health is largely a matter of good future. | SD | D | A | SA |
| 39. Although I am not happy with my life, there is nothing I can do about it now. | SD | D | A | SA |
| 40. My partner compromises a lot. | SD | D | A | SA |
| 41. I like making decisions and assigning jobs to others. | SD | D | A | SA |
| 42. Much of the trouble I'm having is due to bad luck. | SD | D | A | SA |
| 43. Most of the time I feel very low. | SD | D | A | SA |
| 44. I usually feel better after a good cry. | SD | D | A | SA |
| 45. If I get upset I'm likely to get a headache. | SD | D | A | SA |
| 46. In everything I do lately I feel I am being tested. | SD | D | A | SA |
| 47. After some time making love is not pleasurable. | SD | D | A | SA |
| 48. The only place where I feel relaxed is in my own home. | SD | D | A | SA |
| 49. In most marriages one partner is unhappy. | SD | D | A | SA |
| 50. In most marriages both partners are unhappy. | SD | D | A | SA |
| 51. Most married couples don't show much affection for each other. | SD | D | A | SA |
| 52. People's misfortunes result from the mistakes they make. | SD | D | A | SA |
| 53. No matter how hard you try some people just don't like you. | SD | D | A | SA |
| 54. I have often found that what is going to happen will happen. | SD | D | A | SA |
| 55. Trusting fate has never turned out as well for me as making a decision to take a definite course of action. | SD | D | A | SA |
| 56. Becoming a success is a matter of hard work, luck has little to do with it. | SD | D | A | SA |
| 57. I prefer to have my own business. | SD | D | A | SA |
| 58. I wish I had some luck in my life. | SD | D | A | SA |
| 59. Whenever I don't feel well, I consult a medically trained professional. | SD | D | A | SA |
| 60. My relatives are nearly all in sympathy with me. | SD | D | A | SA |
| 61. There are many people who understand me. | SD | D | A | SA |

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|---|----|---|---|----|
| 62. When I recover from an illness, it is usually because other people have been taking good care of me. | SD | D | A | SA |
| 63. I like plenty of excitement going on around me. | SD | D | A | SA |
| 64. I am rather lively. | SD | D | A | SA |
| 65. I feel restless that I cannot sit in a chair for long. | SD | D | A | SA |
| 66. I find it hard to get to sleep at night because I am worrying about things. | SD | D | A | SA |
| 67. I am often troubled with guilty feelings. | SD | D | A | SA |
| 68. Trying hard is not worth it because things usually will not turn out the way you want them to. | SD | D | A | SA |
| 69. As time goes by I feel more relaxed about my marriage. | SD | D | A | SA |
| 70. No matter how well a person follows his/her doctor's orders, he/she has to expect a great deal of illness in his/her life time. | SD | D | A | SA |
| 71. A person understands his own health better than most doctors do. | SD | D | A | SA |
| 72. There are people who care about what happens to me. | SD | D | A | SA |
| 73. I'll avoid seeing a doctor whenever possible. | SD | D | A | SA |
| 74. I work long hours even though my job does not require this. | SD | D | A | SA |
| 75. If I know that I am infertile I would not get married. | SD | D | A | SA |
| 76. If a doctor told me I needed a major operation, I would have it done immediately. | SD | D | A | SA |
| 77. The care I have generally received from doctors in the last few years has been excellent. | SD | D | A | SA |
| 78. The cost of medical care, in general, is much too high. | SD | D | A | SA |
| 79. Without having children the couples can have a good life. | SD | D | A | SA |
| 80. The decision to have children is mostly due to social pressure. | SD | D | A | SA |
| 81. It is the female partner who insists on having children. | SD | D | A | SA |
| 82. It is the male partner who wants to have children. | SD | D | A | SA |
| 83. Members of my family and my close relatives get along quite well. | SD | D | A | SA |
| 84. If couples knew that they couldn't have children, they probably wouldn't have married. | SD | D | A | SA |
| 85. The future is more promising for those couples | | | | |

| | | | | |
|---|----|---|---|----|
| who have children rather than those who have not. | SD | D | A | SA |
| 86. I love to go shopping almost every day. | SD | D | A | SA |
| 87. Not having children is a big problem. | SD | D | A | SA |
| 88. When things get really bad, I know I can count on my family for help. | SD | D | A | SA |
| 89. Children are the joy of life. | SD | D | A | SA |
| 90. When socialising with others I prefer families with no children. | SD | D | A | SA |
| 91. I believe that my home life is as pleasant as that of most people I know. | SD | D | A | SA |
| 92. I am often disappointed by others. | SD | D | A | SA |
| 93. I cannot just turn up to a party, I would rather go if I have been personally invited. | SD | D | A | SA |
| 94. No matter what I do, if I am going to get sick I will get sick. | SD | D | A | SA |
| 95. I am seldom in the mood for sex. | SD | D | A | SA |
| 96. I feel inadequate sexually. | SD | D | A | SA |
| 97. I am dissatisfied with my sexual performance. | SD | D | A | SA |
| 98. My partner is less interested in having sex. | SD | D | A | SA |
| 99. Considering divorce because of not having children is normal. | SD | D | A | SA |
| 100. I have become quite irritable lately, so I try to avoid friends because it may cause more tension. | SD | D | A | SA |
| 101. It is good to have children around you. | SD | D | A | SA |
| 102. Families with children have more financial problems. | SD | D | A | SA |
| 103. I have made better progress at work than others. | SD | D | A | SA |
| 104. My mood could frequently be described as gloomy. | SD | D | A | SA |
| 105. I feel good about myself. | SD | D | A | SA |
| 106. When I make a mistake, I do not come down too hard on myself. | SD | D | A | SA |
| 107. I frequently think that something is about to go wrong. | SD | D | A | SA |
| 108. If something goes wrong, it is usually my fault. | SD | D | A | SA |
| 109. People say I do not see the positive side very much. | SD | D | A | SA |
| 110. I enjoy shopping with my friends. | SD | D | A | SA |
| 111. I feel that it is not right for me to have fun or be happy. | SD | D | A | SA |

| | | | | |
|--|----|---|---|----|
| 112. I worry constantly about the future. | SD | D | A | SA |
| 113. It is both partners who want to have children. | SD | D | A | SA |
| 114. I blame myself when I do not succeed. | SD | D | A | SA |
| 115. If I get sick it is my own attitude which determines how soon I will get well. | SD | D | A | SA |
| 116. I feel like a failure. | SD | D | A | SA |
| 117. I have a much harder time than others when I do anything. | SD | D | A | SA |
| 118. As time goes by couples become less sexually attracted to one another. | SD | D | A | SA |
| 119. Things will turn out all right if you just look on the bright side. | SD | D | A | SA |
| 120. I have no regrets for what I have done in the past. | SD | D | A | SA |
| 121. I dwell on problems. | SD | D | A | SA |
| 122. As an adult, I worship regularly. | SD | D | A | SA |
| 123. I follow most religious rules. | SD | D | A | SA |
| 124. Religion tends to dominate my life. | SD | D | A | SA |
| 125. I turn to religion occasionally. | SD | D | A | SA |
| 126. Religion is an important part of society. | SD | D | A | SA |
| 127. I believe that everything that has happened to me is God's will. | SD | D | A | SA |
| 128. I am responsible for all my actions. | SD | D | A | SA |

پرسشنامهٔ عمومی

این پرسشنامه طوری تنظیم شده تا عقاید و رفتار اجتماعی و روانی افراد را بسنجید. هر سؤالی دارای ۴ جواب می‌باشد: شدیداً مخالفم - مخالفم - موافقم و شدیداً موافقم. لطفاً هر سؤالی را به دقت مطالعه فرمائید و با مناسبترین جواب از میان چهار جواب بالا آن را پاسخگو باشید. اگر در مورد هر يك جواب كاملاً مطمئن نیستید، آن جوابی را كه به نظرتان نزدیکتر است انتخاب فرمائید. وقت زیادی برای هر سؤالی صرف نفرمائید و بسیار با ارزش می‌باشد كه جواب هر سؤالی را با خلوص نیت انتخاب فرمائید. **تمام اطلاعات دریافت شده بصورت محرمانه می‌باشد و نگران آن نباشید.**

| جنس | سن | مذهب | تحصیلات و شغل |
|-----|----|------|---------------|
|-----|----|------|---------------|

از همکاریتان متشکریم

| | | | | |
|--|---------------|--------|--------|---------------|
| 1- زندگیم پر از هیجان می‌باشد. | شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم |
| 2- کارم بر من فشار زیاد می‌آورد. | شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم |
| 3- حتی اگر احساس کسالت هم نکنم، باید سالی يك بار به نزد پزشك برای چك کردن رجوع كنید. | شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم |
| 4- برایم مشکل است كه بروی كاری تمرکز كنم. | شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم |
| 5- بیشتر وقتها ترجیح می‌دهم به خواب و رویا فرو بروم. | شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم |
| 6- زندگی درست و خوبی نداشته‌ام. | شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم |
| 7- برایم مهم نیست كه مورد مسخره مردم قرار بگیرم. | شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم |
| 8- اگر از خودم مواظبت بكنم، از بروز بیماری جلوگیری می‌شود. | شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم |
| 9- گاهی احساس پوچی می‌كنم. | شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم |
| 10- عقیدهٔ دیگران در مورد من برایم مهم نیست. | شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم |
| 11- بیشتر وقتها احساس ضعف و ناتوانی می‌كنم. | شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم |
| 12- عشق و علاقه در درون خانوادهٔ من کمتر از خانواده دیگر است. | شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم |
| 13- عادات بعضی از افراد خانوادام مرا می‌رنجاند. | شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم |
| 14- جاهانی را كه تا حالا نرفته و ندیده‌ام دوست دارم | شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم |

77- تمام احتیاجات درمانی که اخیراً دریافت کرده‌ام عالی بوده است.

شدیداً مخالفم مخالفم موافقم شدیداً موافقم
شدیداً مخالفم مخالفم موافقم شدیداً موافقم

78- قیمت و مخارج دارو و درمان بسیار بالا است.

79- بدون داشتن فرزند زوجهائی می‌توانند خوشبخت باشند.

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

80- دلیل بچه‌دار شدن بخاطر فشارهای اطرافیان و جامعه می‌باشد.

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

81- معمولاً خانمها اصرار زیادی برای بچه‌دار شدن دارند.

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

82- معمولاً آقایان اصرار زیادی برای بچه دار شدن دارند.

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

83- افراد خانواده و فامیلم با هم رابطه خوبی دارند.

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

84- اگر زوجی بداند که در آینده بچه‌دار نمی‌شوند هیچ وقت با هم ازدواج نمی‌کنند.

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

85- آینده کسانی که بچه‌دار هستند روشنتر از کسانی است که بچه ندارند.

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

86- دوست دارم هر روز بروم خرید.

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

87- نداشتن بچه مشکل بسیار اساسی است.

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

88- اگر اتفاق ناگواری بیافتد، خانواده‌ام بسیار مفید و کمک کننده هستند.

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

89- وجود بچه‌ها لذت زندگی می‌باشد.

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

90- ترجیح می‌دهم با کسانی رفت و آمد و معاشرت کنم که بچه ندارند.

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

91- فکر می‌کنم زندگی خانواده گیم بخوبی و خوشی افراد دیگر می‌باشد.

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

92- معمولاً دیگران مرا مأیوس می‌کنند.

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

93- معمولاً ترجیح می‌دهم به میهمانیها دعوت بشوم اگر نه در آنها شرکت نمی‌کنم.

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

94- مهم نیست چقدر سعی و کوشش بکنم، اگر قرار باشد مریض بشوم، می‌شوم.

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

95- معمولاً حوصله رابطه فیزیکی ندارم.

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

96- در مورد رابطه فیزیکی خودم احساس خوبی ندارم.

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

97- از رابطه فیزیکیم احساس رضایت ندارد.

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

شدیداً مخالفم مخالفم موافقم شدیداً موافقم

121- با مشکلات دست و پنجه نرم می‌کنم.

122- بعنوان يك انسان بالغ، وظایف مذهبییم را بجا می‌آورم.

123- اکثر وظایف مذهبییم را انجام می‌دهم.

124- مذهبیم غلبه زیادی روی زندگیم دارد.

125- بندرت رو به مذهب می‌برم.

126- مذهب قسمت عظیم و مهم جامعه می‌باشد.

127- معتقدم که هر اتفاقی در زندگیم می‌افتد بخواست

خداوند است.

128- خودم مسئول تمام اعمال خودم هستم.

Appendix 2: Initial Statistics for a Principle Components Analysis of the 128-item Questionnaire

| <u>Factor</u> | <u>Eigenvalue</u> | <u>Pct of. Var.</u> | <u>Cum. Pct</u> |
|---------------|-------------------|---------------------|-----------------|
| 1 | 13.58458 | 10.6 | 10.6 |
| 2 | 8.61186 | 6.7 | 17.3 |
| 3 | 4.47450 | 3.5 | 20.8 |
| 4 | 4.38268 | 3.4 | 24.3 |
| 5 | 4.28043 | 3.3 | 27.6 |
| 6 | 3.49452 | 2.7 | 30.3 |
| 7 | 3.33553 | 2.6 | 32.9 |
| 8 | 3.0539 | 2.4 | 35.3 |
| 9 | 2.71350 | 2.1 | 37.4 |
| 10 | 2.59827 | 2.0 | 39.5 |
| 11 | 2.40236 | 1.9 | 41.4 |
| 12 | 2.33740 | 1.8 | 43.2 |
| 13 | 2.23572 | 1.7 | 44.9 |
| 14 | 2.14013 | 1.7 | 46.6 |
| 15 | 2.08492 | 1.6 | 48.2 |
| 16 | 1.92989 | 1.5 | 49.7 |
| 17 | 1.91057 | 1.5 | 51.2 |
| 18 | 1.88161 | 1.5 | 52.7 |
| 19 | 1.74977 | 1.4 | 54.1 |
| 20 | 1.66329 | 1.3 | 55.4 |
| 21 | 1.65380 | 1.3 | 56.7 |
| 22 | 1.60717 | 1.3 | 57.9 |
| 23 | 1.52173 | 1.2 | 59.1 |
| 24 | 1.49707 | 1.2 | 60.3 |
| 25 | 1.46884 | 1.1 | 61.4 |
| 26 | 1.46423 | 1.1 | 62.6 |
| 27 | 1.40093 | 1.1 | 63.7 |
| 28 | 1.38397 | 1.1 | 64.7 |
| 29 | 1.33370 | 1.0 | 65.8 |
| 30 | 1.25542 | 1.0 | 66.8 |
| 31 | 1.22441 | 1.0 | 67.7 |
| 32 | 1.20203 | .9 | 68.7 |
| 33 | 1.17159 | .9 | 69.6 |
| 34 | 1.13641 | .9 | 70.5 |
| 35 | 1.13028 | .9 | 71.3 |
| 36 | 1.09075 | .9 | 72.2 |
| 37 | 1.05673 | .8 | 73.0 |
| 38 | 1.05478 | .8 | 73.8 |
| 39 | 1.01789 | .8 | 74.6 |
| 40 | 1.00344 | .8 | 75.4 |

Appendix 3: Results of Cronbach’s alpha for test of internal reliability for the five factors of the questionnaire

Results of Cronbach’s alpha for test of internal reliability of the 32 items relating to Psychological Distress (Factor 1) measure. Section 1: first solution, section 2: final solution.

| Section 1 | | Section 2 | |
|-----------|--------------------------|-----------|--------------------------|
| Items | Alpha If Item Deleted | Items | Alpha If Item Deleted |
| 96 | .8777 | 96 | .8896 |
| 95 | .8788 | 95 | .8904 |
| 19 | .8745 | 19 | .8855 |
| 104 | .8766 | 104 | .8875 |
| 97 | .8783 | 97 | .8893 |
| 94 | .8777 | 44 | .8898 |
| 112 | .8775 | 112 | .8888 |
| 116 | .8762 | 116 | .8869 |
| 107 | .8784 | 107 | .8897 |
| 22 | .8784 | 22 | .8897 |
| 30 | .8780 | 30 | .8893 |
| 11 | .8764 | 11 | .8875 |
| 39 | .8758 | 39 | .8866 |
| 114 | .8796 | 114 | .8910 |
| 32 | .8779 | 32 | .8890 |
| 23 | .8773 | 23 | .8886 |
| 9 | .8760 | 9 | .8870 |
| 27 | .8778 | 27 | .8895 |
| 4 | .8780 | 4 | .8890 |
| 111 | .8785 | 111 | .8895 |
| 109 | .8797 | 109 | .8905 |
| 46 | .8786 | 46 | .8902 |
| 66 | .8778 | 66 | .8890 |
| 5 | .8780 | 5 | .8891 |
| 67 | .8819 | 43 | .8920 |
| 43 | .8802 | 54 | .8905 |
| 10 | .8825 | 53 | .8923 |
| 54 | .8787 | 58 | .8915 |
| 45 | .8828 | | |
| 53 | .8809 | | |
| 121 | .8907 | | |
| 58 | .8802 | | |

Results of Cronbach's alpha for test of internal reliability of the 24 items relating to Social Extroversion (Factor 2) measure.

| Items | Alpha If Item Deleted |
|-------|--------------------------|
| 64 | .8126 |
| 100 | .8186 |
| 1 | .8157 |
| 93 | .8143 |
| 120 | .8151 |
| 92 | .8170 |
| 88 | .8172 |
| 24 | .8162 |
| 91 | .8180 |
| 119 | .8157 |
| 26 | .8175 |
| 41 | .8195 |
| 52 | .8208 |
| 60 | .8169 |
| 105 | .8202 |
| 14 | .8182 |
| 68 | .8169 |
| 21 | .8206 |
| 86 | .8213 |
| 110 | .8222 |
| 63 | .8185 |
| 83 | .8183 |
| 61 | .8182 |
| 28 | .8188 |

Results of Cronbach’s alpha for test of internal reliability of the 20 items relating to Marital Satisfaction (Factor 3), measure. Section 1: first solution, section 2: final solution.

| Section 1 | | Section 2 | |
|-----------|--------------------------|-----------|--------------------------|
| Items | Alpha If Item Deleted | Items | Alpha If Item Deleted |
| 89 | .7954 | 89 | .7989 |
| 102 | .8022 | 102 | .8086 |
| 90 | .7980 | 90 | .8029 |
| 98 | .7971 | 98 | .8028 |
| 99 | .7991 | 99 | .8045 |
| 47 | .8058 | 47 | .8144 |
| 50 | .8004 | 50 | .8061 |
| 85 | .8036 | 85 | .8110 |
| 113 | .7974 | 113 | .8024 |
| 80 | .8029 | 80 | .8099 |
| 40 | .8046 | 40 | .8102 |
| 49 | .8002 | 49 | .8052 |
| 75 | .8054 | 75 | .8113 |
| 118 | .8042 | 118 | .8101 |
| 17 | .8048 | 17 | .8129 |
| 69 | .8064 | 69 | .8120 |
| 33 | .8124 | | |
| 72 | .8106 | | |
| 106 | .8136 | | |
| 59 | .8131 | | |

Results of Cronbach’s alpha for test of internal reliability of the 19 items relating to Attitudes Towards Modern medicine (Factor 4) measure. Section 1: first solution, section 2: final solution.

| Section 1 | | Section 2 | |
|-----------|--------------------------|-----------|--------------------------|
| Items | Alpha If Item Deleted | Items | Alpha If Item Deleted |
| 8 | .4217 | 8 | .7675 |
| 34 | .4393 | 34 | .7762 |
| 15 | .4028 | 15 | .7680 |
| 115 | .4364 | 115 | .7804 |
| 31 | .4078 | 31 | .7831 |
| 3 | .4193 | 3 | .7792 |
| 74 | .4944 | 38 | .7863 |
| 38 | .4327 | 94 | .7844 |
| 94 | .4213 | 62 | .7863 |
| 62 | .4022 | 77 | .7900 |
| 77 | .4251 | 20 | .7895 |
| 12 | .5202 | | |
| 6 | .5173 | | |
| 117 | .5116 | | |
| 13 | .4977 | | |
| 42 | .5072 | | |
| 56 | .4675 | | |
| 20 | .4367 | | |
| 51 | .4953 | | |

Results of Cronbach’s alpha for test of internal reliability of the 9 items relating to Attitudes Towards Modern medicine (Factor 5) measure. Section 1: first solution, section 2: final solution.

| Section 1 | | Section 2 | |
|-----------|--------------------------|-----------|--------------------------|
| Items | Alpha If Item Deleted | Items | Alpha If Item Deleted |
| 127 | .8209 | 127 | .8841 |
| 124 | .8148 | 124 | .8744 |
| 126 | .8231 | 126 | .8835 |
| 123 | .8180 | 123 | .8775 |
| 128 | .8249 | 128 | .8951 |
| 122 | .8307 | 122 | .8951 |
| 35 | .8545 | | |
| 25 | .8706 | | |
| 48 | .8633 | | |

Appendix 4: The complete list of questionnaire items after factor analysing and tests of validity and reliability

85-items Questionnaire in English followed by the complete questionnaire in Farsi as administered to all patients and control group

A Questionnaire for assessing the individual’s Psychological and social aspects of infertility

SEX: AGE: RELIGION:
EDUCATION/OCCUPATION:

This Questionnaire is designed to assess the individual’s emotional reaction to infertility, infertility treatment and hospitalisation. Each statement is followed by a series of possible responses: strongly disagree, disagree, agree or strongly agree. Read each statement carefully and decide which response best describes how you feel. Then put a tick over the corresponding response. Please respond to every statement. If you are not completely sure which response is more accurate, put the response which you feel is most appropriate. Do not spend too long on each statement. It is important that you answer each question as honestly as possible. ALL INFORMATION WILL BE TREATED WITH THE STRICTEST CONFIDENCE.
(“SD”, “D”, “A” and “SA” are stand for “Strongly Disagree”, “Disagree”, “Agree” and “Strongly Agree”.)

| | | | | |
|---|----|---|---|----|
| 1. My life is full of things that interest me. | SD | D | A | SA |
| 2. If even a person is feeling good, he/she should get a general physical examination every year. | SD | D | A | SA |
| 3. I find it hard to keep my mind on a task or job. | SD | D | A | SA |
| 4. Most of the time I would rather sit and daydream than do anything else. | SD | D | A | SA |
| 5. If I take care of myself, I can avoid illness. | SD | D | A | SA |
| 6. I certainly feel useless at times. | SD | D | A | SA |
| 7. I feel weak all over much of the time. | SD | D | A | SA |
| 8. I like to visit places where I have never been before. | SD | D | A | SA |
| 9. Most doctors are more interested in their incomes than in making sure everyone receives adequate medical care. | SD | D | A | SA |
| 10. Life without a child is not complete. | SD | D | A | SA |
| 11. Most of the time I wish I were dead. | SD | D | A | SA |

| | | | | |
|---|----|---|---|----|
| 12. I wouldn't go to a hospital unless there was no other option open to me. | SD | D | A | SA |
| 13. I love happy songs and enjoy listening to them most of the time. | SD | D | A | SA |
| 14. Almost everyday something happens to frighten me. | SD | D | A | SA |
| 15. At parties I am more likely to sit by myself rather than join in with the crowd. | SD | D | A | SA |
| 16. I love to go to gatherings/parties. | SD | D | A | SA |
| 17. Give the chance, I could do some things that would be of great benefit to the world. | SD | D | A | SA |
| 18. I am never happier than when I am alone. | SD | D | A | SA |
| 19. My worries seem to disappear when I get in a crowd of lively friends. | SD | D | A | SA |
| 20. I am not happy with the way I am. | SD | D | A | SA |
| 21. Modern medicine can cure almost any illness. | SD | D | A | SA |
| 22. The future is too uncertain for a person to make serious plans. | SD | D | A | SA |
| 23. If you wait long enough, you can get over almost any disease without getting medical aid. | SD | D | A | SA |
| 24. My good health is largely a matter of good future. | SD | D | A | SA |
| 25. Although I am not happy with my life, there is nothing I can do about it now. | SD | D | A | SA |
| 26. My partner compromises a lot. | SD | D | A | SA |
| 27. I like making decisions and assigning jobs to others. | SD | D | A | SA |
| 28. Most of the time I feel very low. | SD | D | A | SA |
| 29. I usually feel better after a good cry. | SD | D | A | SA |
| 30. In everything I do lately I feel I am being tested. | SD | D | A | SA |
| 31. After some time making love is not pleasurable. | SD | D | A | SA |
| 32. In most marriages one partner is unhappy. | SD | D | A | SA |
| 33. In most marriages both partners are unhappy. | SD | D | A | SA |
| 34. People's misfortunes result from the mistakes they make. | SD | D | A | SA |
| 35. No matter how hard you try some people just don't like you. | SD | D | A | SA |
| 36. I have often found that what is going to happen will happen. | SD | D | A | SA |
| 37. I wish I had some luck in my life. | SD | D | A | SA |
| 38. My relatives are nearly all in sympathy with me. | SD | D | A | SA |

| | | | | |
|---|----|---|---|----|
| 39. There are many people who understand me. | SD | D | A | SA |
| 40. When I recover from an illness, it is usually because other people have been taking good care of me. | SD | D | A | SA |
| 41. I like plenty of excitement going on around me. | SD | D | A | SA |
| 42. I am rather lively. | SD | D | A | SA |
| 43. I find it hard to get to sleep at night because I am worrying about things. | SD | D | A | SA |
| 44. Trying hard is not worth it because things usually will not turn out the way you want them to. | SD | D | A | SA |
| 45. As time goes by I feel more relaxed about my marriage. | SD | D | A | SA |
| 46. If I know that I am infertile I would not get married. | SD | D | A | SA |
| 47. The care I have generally received from doctors in the last few years has been excellent. | SD | D | A | SA |
| 48. The decision to have children is mostly due to social pressure. | SD | D | A | SA |
| 49. Members of my family and my close relatives get along quite well. | SD | D | A | SA |
| 50. The future is more promising for those couples who have children rather than those who have not. | SD | D | A | SA |
| 51. I love to go shopping almost every day. | SD | D | A | SA |
| 52. When things get really bad, I know I can count on my family for help. | SD | D | A | SA |
| 53. Children are the joy of life. | SD | D | A | SA |
| 54. When socialising with others I prefer families with no children. | SD | D | A | SA |
| 55. I believe that my home life is as pleasant as that of most people I know. | SD | D | A | SA |
| 56. I am often disappointed by others. | SD | D | A | SA |
| 57. I cannot just turn up to a party. I would rather go if I have been personally invited. | SD | D | A | SA |
| 58. No matter what I do, if I am going to get sick I will get sick. | SD | D | A | SA |
| 59. I am seldom in the mood for sex. | SD | D | A | SA |
| 60. I feel inadequate sexually. | SD | D | A | SA |
| 61. I am dissatisfied with my sexual performance. | SD | D | A | SA |
| 62. My partner is less interested in having sex. | SD | D | A | SA |
| 63. Considering divorce because of not having | | | | |

| | | | | |
|--|----|---|---|----|
| children is normal. | SD | D | A | SA |
| 64. I have become quite irritable lately, so I try to avoid friends because it may cause more tension. | SD | D | A | SA |
| 65. Families with children have more financial problems. | SD | D | A | SA |
| 66. My mood could frequently be described as gloomy. | SD | D | A | SA |
| 67. I feel good about myself. | SD | D | A | SA |
| 68. I frequently think that something is about to go wrong. | SD | D | A | SA |
| 69. People say I do not see the positive side very much. | SD | D | A | SA |
| 70. I enjoy shopping with my friends. | SD | D | A | SA |
| 71. I feel that it is not right for me to have fun or be happy. | SD | D | A | SA |
| 72. I worry constantly about the future. | SD | D | A | SA |
| 73. It is both partners who want to have children. | SD | D | A | SA |
| 74. I blame myself when I do not succeed. | SD | D | A | SA |
| 75. If I get sick it is my own attitude which determines how soon I will get well. | SD | D | A | SA |
| 76. I feel like a failure. | SD | D | A | SA |
| 77. As time goes by couples become less sexually attracted to one another. | SD | D | A | SA |
| 78. Things will turn out all right if you just look on the bright side. | SD | D | A | SA |
| 79. I have no regrets for what I have done in the past. | SD | D | A | SA |
| 80. As an adult, I worship regularly. | SD | D | A | SA |
| 81. I follow most religious rules. | SD | D | A | SA |
| 82. Religion is an important part of society. | SD | D | A | SA |
| 83. I believe that everything that has happened to me is God's will. | SD | D | A | SA |
| 84. I am responsible for all my actions. | SD | D | A | SA |
| 85. Religion tends to dominate my life. | SD | D | A | SA |

پیرسشنامه برای سنجش اثرات روحی و روانی نازائی بر روی افراد

این پرسشنامه طوری تنظیم شده تا اثرات روحی و روانی نازائی را بر روی افراد بسنجد. هر سؤالى دارای ۴ جواب می باشد: شدیداً مخالفم - مخالفم - موافقم و شدیداً موافقم. لطفاً هر سؤالى را به دقت مطالعه فرمائید و با مناسبت ترین جواب از میان چهار جواب بالا آن را پاسخگو باشید. اگر در مورد هر يك جواب کاملاً مطمئن نیستید، آن جوابی را که به نظر تان نزدیکتر است انتخاب فرمائید. وقت زیادی برای هر سؤالى صرف نفرمائید و بسیار با ارزش می باشد که جواب هر سؤالى را با خلوص نیت انتخاب فرمائید. تمام اطلاعات دریافت شده بصورت محرمانه می باشد و نگران آن نباشید.

تحصیلات و شغل

مذهب

سن

جنس

از همکارستان

[illegible]

- 1- زندگیم پر از هیجان می باشد.
- 2- حتی اگر احساس کسالت هم نکنم، باید سالی یک بار به نزد پزشک برای چک کردن رجوع کنید.
- 3- برایم مشکل است که بروی کاری تمرکز کنم.
- 4- بیشتر وقتها ترجیح می دهم به خواب و رویا فرو بروم.
- 5- اگر از خودم مواظبت بکنم، از بروز بیماری جلوگیری می شود.
- 6- گاهی احساس پرچی می کنم.
- 7- بیشتر وقتها احساس ضعف و ناتوانی می کنم.
- 8- جاهائی را که تا حالا نرفته و ندیده ام دوست دارم ملاقات کنم.
- 9- بیشتر دکترها فکرشان در مورد درآمدشان می باشد تا اینکه به حال مریض باشد.
- 10- زندگی بدون فرزند تکمیل نیست.
- 11- بیشتر وقتها آرزو می کنم که مرده بودم.
- 12- به بیمارستان مراجعه نمی کنم مگر اینکه مجبور باشم.
- 13- از موسیقی شاد لذت می برد و بیشتر وقتها به آن گوش می دهد.

- کممک کننده هستند.
- 53- وجود بچه‌ها لذت زندگی می‌باشد.
- 54- ترجیح می‌دهم با کسانی رفت و آمد و معاشرت کنم که بچه ندارند.
- 55- فکر می‌کنم زندگی خانواده‌گیم بخوبی و خوشی افراد دیگر می‌باشد.
- 56- معمولاً دیگران مرا مأیوس می‌کنند.
- 57- معمولاً ترجیح می‌دهم به میهمانیها دعوت بشوم اگر نه در آنها شرکت نمی‌کنم.
- 58- مهم نیست چقدر سعی و کوشش بکنم، اگر قرار باشد مریض بشوم، می‌شوم.
- 59- معمولاً حوصله رابطه فیزیکی ندارم.
- 60- در مورد رابطه فیزیکی خودم احساس خوبی ندارم.
- 61- از رابطه فیزیکیم احساس رضایت ندارد.
- 62- همسرم حوصله رابطه فیزیکی زیاد ندارد.
- 63- طلاق بخاطر نداشتن فرزند قابل قبول است.
- 64- اخیراً از دست دوستانم اعصابم خورد می‌شود و سعی می‌کنم که کمتر ملاقتشان کنم.
- 65- خانواده‌هائی که بچه دارند مشکلات مالی بیشتری دارند.
- 66- معمولاً روحیه افسرده‌ای دارم.
- 67- در مورد خودم احساس رضایت می‌کنم.
- 68- اصولاً فکر می‌کنم اتفاق ناگواری خواهد افتاد.
- 69- اطرافیانم می‌گویند که آدم منفی بافی هستی.
- 70- دوست دارم با دوستانم به خرید بروم.
- 71- احساس می‌کنم که درست نیست خوشحال باشم و خوش بگذرانم.
- 72- معمولاً راجع به آینده نگران و دلوا پس هستم.
- 73- معمولاً هم زن و هم مرد اصرار دارند که بچه‌دار شوند.
- 74- اگر شکستی پیش بیاید، خودم را سرزنش می‌کنم.
- 75- اگر ناخوش بشوم، بستگی به رفتارم دارد تا حالم بهتر
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| شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم |
| شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم |
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| شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم | بشود . |
| شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم | 76- احساس سرشکستگی می کنم . |
| شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم | 77- به مرور زمان زوجها جاذبه فیزیکی را بیکدیگر از دست می دهند . |
| شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم | 78- همه مشکلات حل می شود اگر آدم مثبت باشد . |
| شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم | 79- برای زندگی گذشته احساس پشیمانی نمی کنم . |
| شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم | 80- بعنوان يك انسان بالغ ، وظایف مذهبییم را بجا می آورم . |
| شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم | 81- اکثر وظایف مذهبییم را انجام می دهم . |
| شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم | 82- مذهب قسمت عظیم و مهم جامعه می باشد . |
| شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم | 83- معتقدم که هر اتفاقی در زندگیم می افتد بخواست خداوند است . |
| شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم | 84- خودم مسئول تمام اعمال خودم هستم . |
| شدیداً مخالفم | مخالفم | موافقم | شدیداً موافقم | 85- مذهب غلبه زیادی روی زندگیم دارد . |

Appendix 5: List of publications and conference presentations by the author and collaborators

- Nasseri, M. (2000). Cultural Similarities in Psychological Reactions to Infertility. *Psychological Reports*, **86**, 375-378.
- Baluch, B., Nasseri, M. & Aghssa, M. M. (1998). Psychological and Social Aspects of Male Infertility in a Male Dominated Society. *Journal of Social and Evolutionary System*, **21** (1) 113-120.
- Nasseri, M., Baluch, M. & Aghssa, M. M. (1998). Psychological reactions to Infertility and Infertility Treatments: The Iranian Experience. Poster presented at *Edinburgh Conference for Society of Reproductive and Infant Psychology*, Scotland, Edinburgh, (1998). Abstract published in *Journal of Reproductive and Infant Psychology*, **16**(4), 239-240.
- Nasseri, M. (1998). Psychological reactions to Infertility and Infertility Treatments: The Iranian Experience. Poster presented at *Institute Social Sciences Research (ISSR) Postgraduate Conference*, Enfield Campus, Middlesex University (1998).
- Nasseri, M. (1996). How Infertility is viewed in Iran? Poster presented at *Middlesex University Conference on Research In Technology – MUCORT*.
- Nasseri, M. (1995). Psychology of Infertility in Iran. Paper presented in *Psychology Research Forums at Enfield, Middlesex University*.